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COLLECTIVE REVIEW

SCOLIOSIS

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THE etiology of scoliosis has been the subject of a great deal of study during the past few years. Carey (8) believes that scoliosis is the spinal sign of the unbalance of muscle and bone growth of the back and not a specific disease entity. The kind and degree of scoliosis are dependent upon the extent of the unbalance caused by the weakening and possible paralysis of multiple combinations of muscle groups of the body as a whole. In chronic infantile inanition and malnutrition there is a decrease in muscle weight and a persistence in skeletal growth. The muscles do not degenerate uniformly, the normal dynamic equilibrium of the muscle and bone growth of the spine being therefore disturbed. Carey believes that the problem of scoliosis is fundamentally one of prevention of all conditions which upset the normal dynamic balance of muscle and bone during the period of growth such as chronic inanition and malnutrition and the various types of chronic diseases which lead to undernourishment of the growing child.

Rogers (35) attempts to reduce the elements of the scoliotic deformity to their mechanical components as a means of developing a more efficient treatment.

In a study of physiological scoliosis, Forbes (15) found that rotation of the trunk by means of the upper extremities was followed by rotation of the lumbar vertebrae in one direction and of the dorsal vertebrae in the opposite direction. Rotation and side bending both caused scoliosis of exactly the same character. As a result of this information Forbes tried to treat pathological scoliosis by superimposing physiological scoliosis

of a reverse character upon the already existing deformity. He found it impossible to change the greater by the lesser.

Hawk (10) states that of a group of 2,100 students, 19 per cent had mild scoliosis. From a study of the articular facets he decided that the intervertebral articulations play no part in scoliosis because the deformity did not seem to be influenced by the variation of the planes of these joints from the normal.

Allen and Kahn (5) report a case in which scoliosis was the first sign of a spinal cord tumor.

Abercrombie (1) reports 5 cases of lateral curvature which followed encephalitis lethargica.

The relationship of scoliosis and other congenital abnormalities is discussed by Greig (18).

In a study of the effect of the scoliotic deformity on the vital capacity Flagstad and Kollman (14) found that, in severe cases, the vital capacity varies between 53 and 65 per cent of normal. They suggest that the vital capacity be used as an index of the damage done and of the operative risk. When it approaches 50 to 60 per cent they feel that operative procedures are very hazardous.

Edeiken (10) studied the effect of severe scoliosis on the circulatory system and found that the aorta tends to follow the curves of the spine. In 2 cases observed post mortem the aorta coursed across the thorax transversely to reach the spine. A variation in the blood pressure of the 2 arms of more than 10 mm. of mercury was found in one-third of the cases studied. In most cases, hypertrophy of the right side of the heart was present. Dyspnea on exertion was the only common clinical sign. Edeiken feels that the cir-

culatory changes are due principally to the distortion of the lungs.

The methods of treating scoliosis may be divided into 3 main types (1) gymnastic exercises, (2) the use of various forms of apparatus, and (3) operative methods. From a survey of the recent literature it is evident that most surgeons use a combination of 2 or 3 of these forms of treatment, their choice being determined by the severity of the deformity and the result of treatment.

Aitken (24) bases his treatment on the suggestions of Hoke Abbott and Hoglund. In 1904, Hoke stated that, during respiration a scoliotic expands the bulging parts of his chest more than the flattened portions, and that, because of the articulation of the ribs with the vertebrae movement tends to rotate the vertebrae further in the direction of the rotation deformity. If the bulging portion of the chest is compressed, the flattened parts expand with respiration and this increased movement helps to turn the vertebrae in a direction opposite to that of the rotation deformity. In 1908, Abbott laid stress on the importance of full flexion in combination with breathing windows. Hoglund suggested that the lateral curve be corrected by keeping the patient's weight on the foot on the side of the convexity and allowing the postural reflexes to correct the curve. Aitken re-educates the patient in habitual posture so that the postural reflexes used by the patient in ordinary life tend to correct, rather than perpetuate the deformity. In addition he uses a jacket which permits the principles of Hoke and Abbott, asymmetric breathing and flexion of the spine, to be applied.

Sayre (37) states that in most cases the condition can be improved if the patient can be induced to practice 3 or 4 simple exercises every hour.

Anderson (6) recommends as the most important therapeutic agency the examination of all school children for back deformities as well as for tonsillar conditions.

Steindler (39) states that all but the most severe types of scoliosis can be controlled by the compensation treatment. This method aims at re-alignment of the trunk and body as a whole by means of secondary compensatory curves developed systematically in the adjacent sections of the spine. After body balance has been restored it is the further aim of the treatment to maintain re-alignment by active muscle power. To this end the musculature must be brought to the full control of body posture. The relaxation of the spine necessary to produce these secondary curves must be carried out under constant sur-

veillance so that it does not exceed the ability of the active muscular apparatus to control it. The active maintenance of compensation depends upon the condition of the musculature of the back and body as a whole.

The mobilization of the spine is effected by a system of active motion consisting principally in creeping, body shifting, and spring sitting exercise. Passive exercises include body swinging, manipulations of the pelvis carried out on the plinth and on the oblique Zander seat, and for derotation, the use of an apparatus which holds the thorax immobilized and imparts rotatory movements to the pelvis and lumbar spine.

After observing the results of this treatment for more than four years in 150 cases, Steindler states that, in properly selected cases, a return to normal body balance and satisfactory development of active muscle power of the spine are possible.

Lucas (28) recommends exercises directed at increasing the compensatory curves, stretching with traction on a Bradford frame, and blowing into Wolf bottles. After one or two months of this treatment, a body cast is applied. If following a period in the cast, the spine is stable, the child is sent home in a brace after another series of gymnastic exercises. If the spine is unstable and the musculature weak a fusion operation is done.

Hawks (19) treatment is directed at development of the musculature on the side of the convexity, the object being to cause greater strength and tonicity on this side of the chest and abdomen which will increase the downward pull on the shoulder girdle and gradually bring the spine into permanent alignment. The patient is instructed to stand on one foot, the foot on the side of the convexity, and when carrying a weight to carry it on the side of the concavity, thereby exercising the muscles of the convex side of the trunk. Each day the patient is exercised. As he lies on a table with the convex side of the spine up the entire weight of the head, arms, and trunk is raised and lowered. Keppler (20) has devised an apparatus which aids in the performance of exercise of this type.

Ferguson (11) has found that gymnastics are ineffective in stopping the progress of the curve, but thinks that they have some value in improving the posture and keeping the patient in touch with the surgeon. He points out that, in boys, rapid increase of height ceases at about the age of sixteen years, and in girls, at about the age of fifteen years. In the case of boys, the period from about six to twelve years and in the case of

girls the period from about six to eleven years is a period of comparatively slow growth. During the periods of slow growth the scoliosis often reaches a point at which the increase of deformity does not tend to be rapid or may be absent. In the periods of rapid growth braces or jackets are ineffective in stopping the progress or maintaining the correction of a curve. Often they have a deleterious effect since they tend to weaken the patient.

Rechtman (33) treats his ambulatory patients by the repeated application of plaster jackets renewed once in three months until maximum correction is obtained. Some of his patients are treated in recumbency on a Bradford frame with traction on the head and pelvis. With the latter treatment, maximum correction is obtained in from four to eight weeks whereas when plaster casts are employed a period of from one-half to two years is necessary.

Lowman's method (26) differs from that of Rechtman (33) in that Lowman does not use a Bradford frame. He allows the springs and mattress of the bed to sag so that spinal flexion will occur and render the column more mobile. Continuous traction is applied through a head halter and pelvic girdle. Lateral traction bands are also used. The patient is allowed to remain at home. Massage of the muscles of the convex side is supplemented by passive corrective exercise and breathing exercises. Lowman finds that maximum correction is accomplished after from four to eight weeks of continuous traction. At the end of that time the spine is fused.

In discussing Lowman's article, Kleinberg states that at the Hospital for the Ruptured and Crippled, New York, a convex frame is used which permits greater expansion of the chest during the period of continuous traction.

Kreuscher (25) divides the treatment into 4 stages

- 1 Ambulatory stage. Under head traction a body cast is applied. This is changed every five or six weeks.

- 2 Stage of recumbency. No cast is used. The patient is placed on a Bradford frame with continuous traction on the head and feet for a period of from eight to ten weeks.

- 3 Forcible correction under anesthesia followed by the application of a body cast.

- 4 Operation

Moffat (30) keeps his patients on a Bradford frame with continuous traction for six weeks before operation.

Flagstad (13) recommends treatment by jackets followed, in some cases, by operation.

Peabody (32) has devised a brace for scoliotics which is about the same as the usual Knight brace except that the uprights may be adjusted to increase the correction.

Brewster (7) prepares a plaster model of the patient. This model is shaved down to the desired corrected contour. Over it a removable turnbuckle jacket is made. With this type of apparatus Brewster finds that he can correct single curves, the apices of which are below the eighth dorsal vertebra and can reduce double curves of the same region. No type of curve which is of long duration and associated with marked rotation and ankylosis can be improved.

Ryan (36) has devised a derotating chair in which the patient's chest is held fixed by a plate front and back. With the patient strapped to the seat, the seat may be rotated to any position on its vertical axis. This apparatus does not permit the application of a cast in the derotated position.

Galeazzi (17) has been using his derotation apparatus since 1913. On this apparatus there are 2 independent units, one of which fixes the scapular region and the other the pelvic region. The patient is suspended face downward in the position of a quadruped. Linen bands are fixed over the apex of each curve and used by assistants to produce lateral traction. The apparatus permits rotatory movement of the end units around a vertical axis which with the traction of the linen bands produces lateral flexion of the spine and rotatory movements around the longitudinal axis of the spine. A cast is applied when sufficient correction is obtained. The correction is accomplished very gradually and many casts are applied during the long fixation period.

A survey of the literature of the past six years reveals that the medical profession is almost universally in favor of some type of operative treatment for the more severe types of scoliosis.

Ferguson (11) says, "If a scoliotic case needs any treatment other than mere postural exercise, it needs operative fusion. He has seen no case in which under any other method of treatment, he has been able to prove arrest of progress or even limitation of progress. Moreover he has had no case in which partial or complete correction of the curvature has been maintained except by operation. Risser (34) feels that corrective gymnastics with or without jackets, are of only temporary value in the treatment of progressive scoliosis. Kleinberg (21) states that from 60 to 70 per cent of the cases can be successfully treated by conservative methods. In some cases the deformity progressively increases in spite of

careful treatment. In rachitic cases, the deformity becomes severe very early in childhood and is not amenable to conservative measures. High dorsal and cervicodorsal cases cannot be controlled with apparatus. Kleinberg recommends operation for all cases in which the deformity increases under treatment. Mitchell (29) advises operation for all cases with paralysis and for all other cases in which progress of the deformity is anticipated. Steindler (39) recommends operation for the severe cases. Reichtman's (33) views as to the indications for operation may be taken as a summary of the ideas of the majority of the members of the profession. Reichtman says, "Operative fusion of the spine is indicated when there is an increase in the deformity, pain, and discomfort, inability to withstand plaster treatment, or desire to decrease the time of treatment."

Although most surgeons writing on scoliosis favor operative treatment, there are a few who do not believe that surgical methods are necessary. Aitken (2, 3) continues to treat scoliosis by non-operative methods. Gosselin (17) believes that surgery is not necessary after the use of his derotation apparatus. Francisco (16) states that he has been disappointed in operative procedures because in postoperative cases support with braces must be continued as long as the child is growing. Ober and Ghormley (31) state that fusion should not be done on growing children unless paralysis is present and then only in cases of severe deformity which cannot be held by other means. They say, "As a general rule, we believe that children should not have fusion because the same factors that produced the curves are still present and can exert the same forces on the growing fused bone that were exerted before fusion was done. The result of this is a recurrence and an increase in the deformity producing curvatures which are practically impossible to correct by any means at our command. There is also another reason for non-operative treatment in growing children. If the curve cannot be corrected, the area of rotation of the bodies is lateral to the area of fusion, which is along the laminae and spinous and articular processes and follows the concave aspect of the vertebral bodies so that the line of fusion gives a subtended cord to the arc. This cord, which ties into the ends of the arc, is shorter than the arc, and, if the same rate of growth takes place in the cord and the arc, the total growth must be greater in the bodies, with the result that the lateral and rotation elements increase as growth takes place."

The fallacy of these theoretical objections has been proved by clinical experience. A survey of

the literature shows that adequate internal stabilization of the spine is not followed by increased deformity in the growing child.

For over one hundred years attempts have been made to reduce scoliosis by means of surgery. Reasoning that scoliosis is a deformity caused by muscle contraction analogous to that resulting in torticollis, Guérin, in 1830 began performing myotomies on the concave side. This method was discarded after fourteen years, revived in 1875 by Sayre and Volkmann, and subsequently again discarded.

In 1889 Volkmann performed resection of the ribs on the convex side and in 2 cases obtained slight improvement. Hoffa combined this procedure with resection of the transverse processes on the same side. Similar resections have been done by Gaudier, Maucelière and others in France and by Whitman and Kleinberg in America. Whitman (41) does the operation in 2 stages. At the first sitting 3 or 4 in. of the 3 or more ribs at the apex of the curve are resected subperiosteally. During the period of regeneration of the resected ribs, about six weeks, the patient is placed on a convex frame. The excised portions are preserved in alcohol and at the time of the second stage are boiled and used as dead grafts. The routine Hibbs procedure is done and the grafts are laid along the laminae on the concave side of the curvature. Whitman (41) states that, whether the bone was split or used whole and whether it was fresh or boiled, homologous or heterogenous, the X-ray showed a heavy deposit of bone along the fused area in all cases.

The operation of bilateral rib resection proposed by Hoffa, which was tried and discarded by Ryerson and performed with some success by Sauerbruch, has very little to support it. Theoretically it is supposed to free the vertebral column so that correction can be obtained but practically it involves a good deal of surgery for very slight improvement. The same may be said of resection of the ribs on the concave side and all other rib operations (12).

In 1900 Chipault reported the results of fixation operations. Although he sought to immobilize the spine with wire, he seemed to realize that this method was inadequate and suggested that since the deformity is bony the operative treatment should attack the bone itself. Thirteen years later, after methods for bony ankylosis of the spine had been brought out by Albee and Hibbs, these methods were first used for scoliosis by Galloway and Kidner independently. Since then, they have been used more and more by surgeons in all countries.

The Albee method (4) has been found to give a most satisfactory result. In this operation the spinous processes and interspinous ligaments are split longitudinally and one-half of each spinous process is fractured completely at its base and set over a distance which varies according to the thickness of the graft to be implanted. A flexible probe is bent to conform to the curve of the graft bed so formed. With the use of this probe as a pattern, a graft of the proper size and shape is removed from the tibia with a motor saw and inserted into the gutter formed by the halves of the spinous processes and their interspinous ligaments. The ligaments and muscles are then drawn over the graft with interrupted sutures of kangaroo tendon. A body cast is applied and left on for a period of eight weeks. At the end of that time the patient is allowed to get out of bed. A Knight spinal brace is worn for two months. Thereafter, no support is necessary.

The Hibbs technique consists of subperiosteal reflexion of the soft parts from the spinous processes and laminae. An arthrodesis of the joints between all of the articular facets is done. The spinous processes are broken down and chips of bone from the laminae and the fragments of the spinous processes are placed so as to overlap the spaces between the laminae. Following the operation the patient is placed in a flat bed for about ten days. At the end of that time he is put on a Bradford frame for from eight to ten weeks with traction on the head and pelvis. Following the application of a body cast he is allowed to get up. The cast must be worn for from six to nine months. At the end of that time a removable brace is worn for several months. This period of postoperative traction on a Bradford frame is recommended by most surgeons except Albee. Kleinberg (22) Kreuscher (25) and Lowman (26) recommend postoperative traction for eight weeks. It is interesting to note that, according to Albee (4) postoperative immobilization should be continued for ten months according to Hibbs, for one and a half years and according to Kleinberg, for two years.

A survey of the literature during the past six years indicates increasing dissatisfaction with the results of fusion operations of the spine which do not utilize some form of bone graft. Steindler (39) states that a very large number of his cases in which fusion was done by the Hibbs method showed a subsequent break or pseudarthrosis formation in the dorsolumbar region.

Because of these poor results, a number of modifications have been proposed in which some form of bone graft is used. Moffat (30) sum-

marizes the drawbacks of the Hibbs operation as follows:

'1 A technical difficulty—the dissection must be careful lest the inclusion of fibrous tissue prevent union. As a result, the operation is of long duration

'2 Severe cases cannot be fused because of the overlap on the convex side.

'3 Mechanical deficiencies (a) Not sufficient deposition of bone before six months. (b) Fusion follows the curve of the spine so that the newly formed bone may yield to the supra incumbent weight. (c) At each vertebra there are 5 points which must fuse. In the Hospital for the Ruptured and Crippled, the majority of cases operated showed motion demonstrable on the vertical fluoroscope in the fused area.

In Moffat's modification (30) a flap composed of periosteum and interspinous ligaments from the spinous processes and laminae of the concave side is reflected. The spinous process at each pole of the incision is cleft and the intervening spinous processes are broken down. A straight 3 layer graft is taken from the tibia and the periosteal flap sutured around this graft. The graft extends from the beginning to the end of the curve as does the string on a bow.

Kreuscher (25) recommends fusion of the entire spine. He splits the spinous processes from the seventh cervical to the lower lumbar segments. Slender segments of graft from 2 to 4 in. long and $\frac{1}{16}$ in. thick are taken from the tibia and overlapped in the cleft spinous processes. A hand chisel is employed as in Kreuscher's opinion the chisel and mallet should not be used in an extensive operation on the spine.

Kleinberg (22) found it dangerous to attempt to carry out the details of the Hibbs technique on the convex side of the spine as the bones are so deformed that it is impossible to reach or identify the articulations on this side. He was therefore obliged to use some sort of internal splint. He states that the bone graft has several obvious advantages:

1 It acts as a strong internal splint which helps to maintain the correction while consolidation of the vertebrae operated upon is awaited.

2 It acts as a stimulant to new bone formation.

3 It is a scaffold upon which new bone is deposited.

However Kleinberg does not use a tibial bone graft in his modification of the Albee technique because he finds (23) that it takes him twenty minutes to remove the graft from the leg. He uses boiled beef bone previously cut to the proper size and shape. Chipping of the spinous processes

into fan shaped fragments destroys firm anchorage for the internal splint, and fragmentation of the beef bone in about six or seven months further decreases its immobilizing power. Kleinberg later (24) modified his technique, making it similar to the Albee method except that he substituted beef bone for tibial bone.

Lowman (26) fuses the spine by denuding the periosteum and musculature from the concave side and placing a tibial graft in this bed.

Steele (38) recommends a change in position of the fifth lumbar vertebra as a method of correcting a low spinal curve. The lateral articulations of this vertebra, on the concave side are freed of cartilage and the body is lifted upward and backward with a periosteal elevator. A wedge of beef bone $\frac{1}{4}$ in. thick is placed between the articular facets of the fourth and fifth lumbar vertebrae and a wedge $\frac{3}{8}$ in. thick is placed between the articular facets of the fifth lumbar vertebra and the sacrum. The lower spine is then fused. No mention is made of the results of this method of treatment.

Compere (9) and von Lakum and Smith (40) have tried excision of hemivertebrae for the correction of scoliosis. Von Lakum and Smith attempted it in 10 cases. One patient died of shock. In 2 the scoliosis was corrected to a point where the spine was straight. In the others, the condition was either not improved or was made worse. Compere reported 2 cases, but as the patients were still wearing a postoperative plaster support the end result could not be determined.

Lowman (27) devised a method of strengthening the abdominal wall in paralytic scoliosis. He introduces fascial strip transplants either subcutaneously or into the rectus sheath. These strips are embedded in a radiating direction from the umbilicus and fastened to the costal border of the bony pelvis. Lowman states that in all 12 cases thus treated the results were encouraging.

COMMENT

It is possible, from a careful study of the literature to form an opinion as to the trend in the treatment of scoliosis. The preferred treatment seems to be exercise for the mild cases and continuous traction on a Bradford frame or a flat bed for the more severe cases and all pre-operative cases. Treatment by plaster jackets or derotation apparatus seems to have fallen into disfavor. It is evident that some form of operative treatment is thought necessary for all cases which cannot be easily controlled by exercise. Widespread dissatisfaction with the results of fusion opera-

tions which do not utilize some form of internal splint is shown by the large number of new procedures reported, most of which are modifications of the original Albee technique. Many of them are mechanically unsound because either the firm anchorage of the graft is destroyed or the internal splint itself is composed of a substance which soon disintegrates. Operations for the excision of hemivertebrae or the wedging of articular facets of hemivertebrae have not been followed by sufficiently good results to recommend them. Strengthening of the abdominal wall with fascial strips may become a valuable procedure in certain cases.

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ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HEAD

Le Fort R. and Moreau J. Circumscribed Osteoporosis of the Skull (Osteoporose circonscrite du crâne) *Arch. franco-belge de chir.* 933-34, XXIV 7

The author reports two cases of circumscribed osteoporosis, a rare and little understood disease which must be distinguished from pituitary dysostosis. Both of these diseases were first described as clinical entities by Schueller.

The author's first patient was a man forty-one years of age who was in good general health. Except for the bony changes, the findings of physical examination were negative. The history of the condition went back many years. At the age of fourteen the patient was knocked down by a pitched ball which struck him over the upper jaw on the left side. In 1918 a painless swelling of the left upper jaw was noted, and from this time there was a gradual loss of teeth on that side. The last tooth was removed in 1937. The patient was referred to the authors by a dentist who suspected sarcoma.

Examination revealed a diffuse hyperostosis of the upper jaw which was most marked at the site of the left canine fossa. The overlying mucous membrane showed many injected vessels. The lower two-thirds of the maxillary antrum was obliterated. By 1932 the swelling of the jaw had definitely increased and areas of rarefaction had become evident in the mandibles and especially in the frontoparietal regions. The rarefied areas were situated 4 cm. above the supra-orbital ridges and extended into the temporal bones posteriorly to a line on a level with the sella turcica. There were also minute perforations of the frontal bones. The sella was small and thick walled. The posterior clinoid process was particularly hypertrophied. Roentgenograms of the pelvis and femora showed the picture of Paget's disease.

Intensive radiotherapy resulted in a definite amelioration of the cranial lesions.

The second patient presented patches of rarefaction in the skull and paraplegia. For a long time the paraplegia was believed to be due to Pott's disease. Roentgenograms of the spine showed a fusiform swelling of the third and fourth dorsal vertebrae. A diagnosis of Paget's disease of the spine was made. Operation revealed a vascular bony mass.

The general features of circumscribed osteoporosis may be summarized as follows:

The roentgen changes consist of a vast zone of decalcification which either encircles the skull just above the base or is confined to the vertex. The transparency of the region involved is complete and uniform.

The boundaries are sharp but often scalloped. In contrast to the X-ray appearance, the bone is firm and entirely normal to palpation. The other bones of the skeleton are either normal or show the roentgen picture of Paget's disease.

Symptoms may be entirely absent, but in some cases persistent headache, convulsions, nausea, vomiting, and mental symptoms have occurred. The laboratory findings, including the blood calcium, are normal.

Little is known regarding the histological changes in the affected bones. In a case reported by Cushing, biopsy showed the lesions to be a combination of proliferation and disintegration and a diagnosis of atypical Paget's disease was made.

The only treatment employed to date has been X-ray therapy. The results have been encouraging.

The condition in the authors' first case appeared to be a combination of leontiasis ossea, Paget's disease, and circumscribed osteoporosis. The association of these conditions was reported by Lacroix in 1931, Beck in 1907, Parry in 1912, Jefferson in 1915 and Hamberger and Nachlars in 1926. Hamberger and Nachlars concluded that leontiasis ossea is merely a form of Paget's disease and LeFort and Moreau are of the same opinion.

ALBERT F. DE GROAT, M.D.

Lauwers, E.: Two Cases of Thrombophlebitis of the Cavernous Sinus Treated by Drainage (Deux observations de thrombophlébite du sinus caverneux traitées par drainage) *Bull. et mém. Soc. nat. de chir.* 1934, LX, 30.

Up to the present time only twenty-two cases of sinus thrombosis have been cured by operation. Most surgeons have limited their treatment to evacuation of the initial focus of infection, trusting to the natural defenses of the body to eliminate the lesion of the sinus. A more logical treatment is drainage of the sinus and immobilization by ligation of the internal carotid artery. The latter procedure was first employed by Brunner who obtained a cure thereby. Ligation of the internal carotid is feasible only in the cases of patients who are free from arteriosclerosis. Normally the collateral circulation is quite adequate but ligation of the common carotid carries less risk.

The orbital route of approach to the sinus was suggested by the elder Biercher. It gives a wide exposure and is the best approach when the sight of the eye has been lost. Unfortunately the operation is mutilating. In a case reported by Christophe, the patient's life was saved by temporary resection of the

external wall of the orbit (Kroelien's operation) Lauwers prefers Franke's operation.

The first of the two cases reported by Lauwers was that of a boy fifteen years old who presented the typical symptoms and signs of unilateral cavernous sinus thrombosis. The origin of the infection was not apparent. Examination revealed slight papill edema, fixation of the bulb, and chemosis of the right eye. Under local anesthesia, the right common carotid artery was exposed and twisted. Then under general anesthesia, an incision was made along the superolateral border of the orbit and extended posteriorly the length of the zygomatic arch. The arch was sectioned in the middle. The periosteum being elevated along the line of incision, the frontal attachment of the malar bone was sectioned with an osteotome directed downward and inward as far as the inferior orbital fissure. The maxillary attachment of the malar bone was sectioned with a Gigli saw and the resulting osteoplastic flap reflected downward on the pedicle formed by the masseter muscle. The periosteal lining of the orbit was detached and the orbital contents were displaced medially. The inferior ophthalmic vein being exposed at the point where it entered the inferior orbital fissure, it was incised and a drain placed at the opening. The bony flap was then replaced and the wound sutured. The patient recovered uneventfully and left the hospital one month later. Vision of both eyes was normal.

The second case was that of an adult male. The operation was the same as that performed in the first case, but was unsuccessful. The involvement of the sinus was secondary to an extensive carbuncle of the face, and meningitis had already begun.

ALBERT F. DEGRAAT, M.D.

Kaplan I 1: Sarcoma of the Cheek Following Tricho X-Ray Treatment for Hair on the Face. Report of a Case. *J Am M Ass* 1934 cli, 505

Since the discovery of the X-rays many biological reactions have been caused by this form of energy. Unfavorable reactions were first reported by Marceuse in 1896. X-ray dermatitis was described in detail by Klenbock in 1900. It was found that when the X-rays were properly employed they produced epilation without a destructive effect on the skin. However, MacKee has warned against their careless use for this purpose because careful observers have learned that overexposure or often repeated exposure of the skin to the X-rays produces a thickening of the skin with telangiectasis, keratosis, and at times ulcerative necrosis and malignant changes in the skin and adjacent tissues. These changes may appear many months or years after the first application of the rays.

Until recently the lack of governmental restriction of the use of X-ray apparatus made it possible for beauty specialists to employ the X-rays in the treatment of hirsuties facialis.

In the case reported by the author definite malignant degeneration of the skin and subjacent tissues

occurred eight and a half years after X-ray treatment by the Tricho method advertised by a beauty parlor to remove hair. The patient, a woman twenty-eight years of age was examined at the New York City Cancer Institute. In 1926 she had twenty roentgen treatments to each side of the face at biweekly intervals. Later she noticed some reddening and whitening of the cheeks. In 1931 a growth began to develop on the right cheek. In 1933, examination revealed marked telangiectasis and scarring of both sides of the face, the upper lip and the chin. On the right cheek there was an irregular strawberry red tumor mass measuring 1 by 2 in. which was covered by a dirty scab. The mass was firmly splinted to the underlying structures of the cheek. Treatment with radium caused no improvement. A month later the entire lesion was removed by operation. Pathological examination of the mass showed it to be a spindle-cell sarcoma. At the present time the wound is still incompletely healed.

The malignant changes occurring in most X-ray burns are of the carcinomatous type. The case reported in this article is the first case of sarcomatous tumor the author has seen at the Institute.

In conclusion Kaplan warns against the use of irradiation by persons without proper training. Removal of hair by the X-rays is associated with danger because destructive lesions of the skin may occur many months or years later.

J. EDWIN KIRKPATRICK, M.D.

EYE

Bergmann M B The Relationships Between Ophthalmology and Obstetrics *Am J Ophth* 1934, xvii, 141

The relationships between ophthalmology and obstetrics are considered with reference to the different phases of pregnancy and parturition and the more common conditions of the newborn.

The proposed tests for the diagnosis of pregnancy are of little value at present. White estimates that at least 90 per cent of women have some objective or subjective ocular symptoms during pregnancy.

Subjective complaints such as blurred vision, headache, diplopia, and night blindness are a partial index of the patient's condition. The general impairment of nutrition results in such conditions as sties, blepharitis, keratoconus, phlyctenulosis, refractive changes and relaxation of either the extrinsic muscles or the muscles of accommodation. Graef emphasizes the influence of emotional disturbances and hysteria which includes modification of the fields of vision and even blindness but warns that the symptoms may be due to unrecognized circulatory or toxic disturbances of low grade.

The most important findings are albuminuric retinitis with or without hemorrhages and exudates, optic neuritis, neuroretinitis, retinal and papillary edema, retrolental neuritis, and amaurosis. These are the ophthalmological guides in the diagnosis and management of the toxemias of pregnancy, and

constitute the strongest link in the relationships between ophthalmology and obstetrics.

Stander reports two cases of pernicious vomiting of pregnancy with hemorrhagic retinitis without edema, exudates, or apparent disease of the retinal vessels. In one case the autopsy findings showed central necrosis of the liver and the anterior lobe of the pituitary gland indicating a toxic basis. In the other case the condition terminated by early abortion with restoration of vision in two weeks. The presence of hemorrhagic retinitis is a dangerous sign justifying early interruption of pregnancy. Banister has pointed out that, while in the simple reflex type, and even in the mild toxic forms, there are no changes in the fundus, the earliest sign of the severe form may be a halo of clouding about the disk due to edema. The albuminuric retinitis occurring in toxemic pregnancy tends to clear up after termination of the pregnancy and restoration of the kidney function.

The type not associated with nephritis, the so-called retinitis gravidarum, usually clears up with little or no change in the fundus. White believes that in cases of non-progressive retinitis without nephritis the pregnancy may be permitted to go to term if the patient is given proper treatment. The severe form of albuminuric retinitis with amaurosis and eclampsia has a mortality of about 50 per cent. The fundus picture is characterized by retinal edema, flame shaped hemorrhages, exudates with a stellate arrangement in the macula and possibly papillary involvement and detachment of the retina. It is most common in the last trimester of pregnancy and more common in multiparae than in primiparae. Termination of the pregnancy is justified, and should be effected within thirty-six hours. Some ophthalmologists believe that this type of retinitis cannot be prevented more than twelve hours without causing permanent damage to vision.

Fuchs believes that when optic retinitis occurs in pregnancy without any other demonstrable cause the prognosis is good even though the patient is totally blind. Because of the usually short duration of the inflammatory nerve changes the prognosis is not always unfavorable even when there is a definite toxemia. Severe cases accompanied by marked toxemia, especially with retinitis, may result in marked loss of vision. The terminal result is optic atrophy of varying degree. The severe types justify termination of the pregnancy.

Retrolbulbar neuritis is usually ushered in by a gradual or sudden loss of vision and by central color vision scotomata, with complete absence of positive findings in the fundus. The toxins primarily attack the orbital portions of the optic nerve. There may or may not be other demonstrable signs of toxemia. Mild cases may clear up entirely with proper treatment of the toxemia, including a search for foci of infection. In the absence of foci of infection and the presence of progressive toxemia accompanied by progressive loss of vision induction of labor is necessary to prevent permanent damage to the sight.

Amaurosis or sudden and complete blindness in pregnancy may be the first sign of serious renal disease or eclampsia. The truly uremic type is usually rapid in onset and presents no abnormal ophthalmoscopic picture. There may be accompanying symptoms such as vomiting, headache, dyspnea, and convulsions. The pathological condition is a transient edema or circulatory disturbance in the cortical visual centers of the occipital lobe produced by toxic irritation. Amaurosis may be a complication of albuminuric retinitis. When a pregnant woman presents the syndrome of sudden blindness with a normal papillary reflex, a normal fundus, and the toxic symptoms of kidney or liver insufficiency the only rational treatment is immediate termination of the pregnancy.

In rare instances sudden loss of sight may occur as the result of bilateral retinal detachment. With the termination of the toxemia the end-results are more favorable than in detachment of the retina from other causes.

In normal pregnancy there is usually a diminution in the light sense. In cases of toxic pregnancy this diminution is greater.

Physiological changes in the pituitary gland are usually manifested as concentric or bitemporal field contractions which are thought to be the result of pressure on the optic chiasm. Mills believes that 90 per cent of all pregnant women show some symptoms of pituitary disturbance. As the symptoms of pituitary enlargement or hyperactivity are visual disturbances, headaches, vomiting, and abdominal pain they may lead to an erroneous diagnosis of toxemia. Therefore, when such symptoms cannot be otherwise accounted for a study of the fundus and visual fields may be of decisive aid in the diagnosis. Schaeffer has suggested the use of lumbar puncture and the injection of hypertonic solution in such cases.

Except in cases of chronic renal or hepatic disease the occurrence of serious ocular changes does not predispose the woman to similar complications in subsequent pregnancies. Therefore routine sterilization is not justified.

All of the important symptoms and signs discussed may begin also at any time after the onset of labor. Their significance during labor is the same as during pregnancy. Paralysis of the extrinsic muscles may occur during or after labor and may be associated with involvement of the third, fourth or sixth cranial nerve root. They are commonly the result of cerebral hemorrhage due to vascular disease.

Toxic states in the puerperium may also cause ocular symptoms. Retinal hemorrhages may occur after delivery in multiparae who have had frequent deliveries or after severe loss of blood causing secondary anemia. In septicemia suppurative panophthalmitis may be caused by the lodgment of an infected embolus in the choroidal or retinal vessels.

General weakness or lowered resistance in the lactation period often results in sties and relaxation

of accommodation headaches and diplopia. Optic neuritis may result from physiological changes, and retrobulbar neuritis from mild toxemia.

In the newborn, the use of silver nitrate solution has reduced the incidence of blindness due to ophthalmia neonatorum from 30 to 12 per cent. However infection may occur from contact after the preventive instillation. Reactions to silver nitrate solution are less likely to occur if the eyes are irrigated with boric acid before, and not directly after the use of the silver nitrate. Purulent conjunctivitis may be caused by the pneumococcus, streptococcus, or colon bacillus. Metastatic pan ophthalmia is a rare complication of cord infections.

In instrumental deliveries care must be taken to prevent direct trauma to the eyes. Injury to the nuclei of the ocular muscles may be caused by pressure injuries and hemorrhage and may result in ptosis and deviations of the eyes. Occasionally lid ptosis appears after spontaneous delivery. It is then probably the result of supranuclear changes. In such cases are found the phenomena of associated movement, such as elevation of the ptosed lid when the mouth is opened.

Congenital anomalies of the eyes are numerous. All cases of nystagmus in infancy should be thoroughly investigated. Irregular and coarse nystagmus due to lack of proper fixation may occur during the first three months without pathological changes. In many cases nystagmus appears some time after birth and has a definite pathological background such as congenital abnormality of the retina and choroid, congenital cataract, corneal opacities, intra-ocular or cerebral hemorrhage, or unusual refractive errors.

Strabismus may be due to injury, congenital insufficiency, or overaction of the extrinsic ocular muscles. Many cases of amblyopia ex anopia are seen in children more than eight years of age because the mothers had been advised that the child would outgrow the condition at the age of seven. Early correction of strabismus by refractive or operative measures is imperative if useful sight is to be conserved or restored.

Congenital stenosis of one or both lacrimal tracts with epiphora is the result of persistence of an obstructing mucous membrane at the lower end of the nasal duct. Secondary purulent conjunctivitis and lacrimal sac infection are frequent. Regular expression of the sac may relieve the condition. If it fails a single probing will usually be sufficient.

Proper ophthalmological study of pregnant women with visual disturbances is of great value in the prevention of severe visual defects and even the loss of life. Routine examinations of the fundus at regular intervals during pregnancy would lead to early recognition of abnormal states. E. S. PLATT, M.D.

Wilmer W. H.: Tubercle-Like Nodules of Epilids and Eyelids. *Am J Ophth* 1934, xvii, 99.

The case reported was that of a woman fifty-six years of age who had noted puffiness of the eyelids

and a painless swelling over the external ocular muscles for a period of eighteen months. A diagnosis of chronic glaucoma of the right eye had been made. The bulbar lesions had been diagnosed as epideritis. Recently the swellings in the lids and over the muscles had increased.

The findings of general physical examination were negative except for overweight and marked fatigue. Chemical studies of the blood, blood-cell counts and a Wassermann test of the blood were negative. The phthalein excretion was 50 per cent. The basal metabolism rate was -6. The intradermal tuberculin test was positive to 1/100 mgm. of old tuberculin.

The right eye showed swelling of both lids which was greatest near the inner canthus. In the left eye the swelling was mainly in the medial portion of the upper lid. In the right lower lid near the nasal margin there was a hard, freely movable lump measuring 9 by 10 mm. This could be pushed back into the orbit, but was attached to the periosteum at the orbital margin. Two smaller nodules of a similar character were present in the right upper lid and one was found in the left upper lid. Over the right internal rectus there was a firm nodule the width of the muscle, which was elevated from 2 to 3 mm and extended back 12 mm from the insertion of the muscle. This was of the general yellowish red color of an inflamed pinguicula and was not tender on pressure. It seemed to be attached to the tendon and muscle sheath. Similar nodules were present over the right external rectus and the left superior rectus. The sclera and conjunctiva were not involved. Vision with refractive correction was 6/6. The visual fields were practically normal. Blind spots for colors were enlarged and the light sense was reduced.

On slit lamp examination of the right eye the cornea showed a Staehli's line horizontal at the lower pupillary margin with a rounded opacity at each end in the deeper layers of the epithelial cells. The aqueous ray was normal. Depigmentation of the pupillary border clumps of pigment on the iris and one well-defined Koeppe nodule on the nasal side of the pupillary margin were found. There were a few pigment granules and some slight remains of exudation on the anterior lens capsule. The lens itself was clear and there were no synechiae. In the left eye there were slight epithelial opacities of the cornea and slight depigmentation of the pupillary border. The aqueous ray was normal and the lens was clear. Over the nodules on the right internal and external recti at the point of insertion of the tendons there were three or four small collections of fluid.

On ophthalmoscopic examination the left eye was found normal. The right eye showed faint vitreous opacities but normal fundi.

The intra-ocular tension (Schlotz) was 25.3 mm Hg in the right eye and 18.6 mm Hg in the left eye.

Examination of a piece of the growth over the right internal rectus showed epithelioid cells, numerous giant cells, and a surrounding lymphocytosis indicating tuberculosis.

Under treatment with thyroid and tuberculin the lachrymation ceased and all of the nodules on the muscles and eyelids except one disappeared. The persisting nodule was removed and found to be similar to the first specimen but contained also areas of calcation. The tonometer showed the tension in the right eye to be 17.5 mm. Hg. and that in the left eye 17 mm. Hg. Four months after the patient was first seen there was no recurrence of the nodules. No bacilli were found in the specimens, and animal inoculations were negative. The glaucoma was controlled by pilocarpine, and the intra-ocular tension remained normal.

It was necessary to differentiate the condition in this case from ordinary episcleritis, nodular scleritis, beginning gelatinous (brawny) scleritis, lymphoma, and Boeck's sarcoid of the conjunctiva and eyelids. The author discusses the differential diagnosis.

In conclusion Wilmer states that the similarity of tubercles and sarcoids suggests a related causation. In the case reported the origin of the ocular lesions seemed to be a tracheobronchial infection transmitted through the blood stream. The local tuberculous process was such as would be expected in a case of high resistance, low allergy and few and avirulent bacteria. The treatment indicated is attention to the general health, the use of tuberculin and surgical removal of the larger growths. In some cases radiotherapy may also be necessary. C. S. PLATT, M.D.

Goldstein, I. Recession of the Levator Muscle for Lagophthalmos in Exophthalmic Goiter. *Arch. Ophth.* 1934, 21, 359.

In some cases of lagophthalmos there is danger to the cornea. Attempts have been made to protect the cornea by operation on the lids, by modifying the sympathetic nervous supply of the orbital contents, and by decompression of the orbit and optic canal. The author prefers recession of the levator. He reports five cases in which this was done and describes the technique of the operation in detail.

Vernon Winocour, M.D.

Peter L. C. The Treatment of Retinal Detachment by Walker's Method of Electrocoagulation. A Report of Cases. *Arch. Ophth.* 1934, 21, 26.

Electrocoagulation offers a method of treating retinal detachment which is less traumatic, less tedious, less time-consuming, and more efficient than any other method advanced. The use of Walker's needles and electrical unit has been a further refinement of the technique. While the time that has elapsed since the introduction of the newer methods has been too brief for full evaluation of these procedures, the author concludes from his experience to date that the Walker method will eventually be preferred because of its simplicity and accuracy.

Peter reports two cases of retinal detachment treated by the Walker method. The visual fields before and after operation are shown. A cure was obtained in both cases. WILLIAM A. MANN, JR., M.D.

RAR

McKenzie, D.: Erysipelas and the Hemolytic Streptococcus in Relation to Otolaryngology. *J. Laryngol. & Otol.* 1934, 21, 105.

The present tendency is to regard the hemolytic streptococcus as responsible not only for many acute ear and nasal sinus infections, but also for epidemic and hospital tonsillopharyngitis, erysipelas, the common forms of pericardial septicemia, and scarlet fever. According to the unitarian view which is supported by clinical experience, erysipelas and scarlet fever are both caused by the same streptococcus. This theory denies specificity to the particular strains present in these diseases and suggests that each variety represents merely a temporary sub-species evolved to suit a particular environment. The appearance of erysipelas in hospital wards is due either to another case of erysipelas or to a streptococcal infection other than erysipelas in another person or in the patient himself. Clean operative wounds are more liable to become infected than wounds already septic.

With regard to prevention the author says, "We have to combat a ubiquitous and protean organism normally present in the upper respiratory tract whose habit ranges from perfect innocence to the most deadly virulence, and the change from friend ship or at least neutrality to enmity may take place over night. However the exogenous streptococcus is most dangerous. Practically it would seem proper to take a culture from all acute conditions of the ears, sinuses, and throat and to treat the cases with hemolytic streptococci as cases of infection to be separated from clean operative cases. Sore throat in members of the hospital staff should be regarded with particular suspicion unless cultures are negative for hemolytic streptococci. Both patients and members of the hospital staff should be warned to report a sore throat at once. If cultures are positive, these persons should be immediately isolated. With regard to the prevention of autogenous streptococcal infection at operation the author says that in acute mastoiditis the extent of the incision and dissection should conform to the requirements of the case even though another operation may be necessary later."

WALTER H. NADLER, M.D.

Guggenheim, L. K.: The Cause of Otosclerosis. *Otosclerosis of the Aural Capsule. A. & Otol. Rhinol. & Laryngol.* 1933, 21, 117.

The author states that ossification begins in the aural capsule at or just before the sixteenth week. As in case of flat membrane bones and long cartilage bones, the appearance of bone in the capsule of the ear occurs in certain definite centers which later fuse. The first center of ossification appears in the outer part of the capsule on the beginning of the first turn of the cochlea just anteroventral and medial to the round window. The area around the stapedial footplate, particularly the part anterior to the stapes, is among the last areas to ossify.

The cartilage model of the aural capsule is surrounded by perichondrium differentiated from mesenchyma. The perichondrium has two layers—an outer fibrous layer and an inner cellular layer of chondroblasts. Growth of cartilage occurs by mitotic division of cells in the chondrogenic portion of the perichondrium and by mitotic or amitotic division of cells in the lacunae. Cartilage regeneration may occur from the perichondrium from cartilage cells, or by metaplasia of adjacent connective tissue cells. When cartilage cells enlarge they produce the enzyme, phosphatase, which probably plays a rôle in calcification. The physical nature of cartilage matrix is such that it invites the deposit of calcium salts from the solutions in which they are found in the body.

The first changes in a center of ossification (about the fourth fetal month) are enlargement of the cartilage lacunae and shrinkage of the cartilage cells. Vacuole formation and disappearance of mitochondria may be noted. It is evident that at this stage some calcium has already been deposited, as when the cartilage is cut a gritty sensation is noted. Soon, ruptures appear in the perichondrium. New thin walled vessels are formed in the perichondrium (single layer of endothelium). These vessels, accompanied by osteogenic cells and histiocytes, enter the cartilage model through the perichondrial ruptures. The deposit of calcium in the matrix is due to the physicochemical properties of the matrix plus the presence of phosphatase secreted by the bone and cartilage cells. Phosphatase is not present in cartilage until a center of ossification appears.

The last portion of the aural capsule to ossify is the oval window region particularly the area anterior to the footplate. This region known as "Cottolano's zone," is the site of entrance into the tympanum of a passageway from the vestibule, the fissura ante fenestram.

By the end of two and a half months the aural capsule has become cartilaginous except at the sites of the oval and round windows, the internal meatus and the cochlear aqueduct. Over the windows there are mesenchymal curtains. The round window curtain differentiates into fibroblasts and then into connective tissue and finally becomes the membrana tympani secundaria. In the case of the oval window curtain the process is more complicated. The stapedial ring is in apposition to the oval window curtain which is composed of mesenchymal cells. At this stage the oval window is membrane covered.

JAMES C. BRASWELL, M.D.

Norris F. H. B.: Notes on Diathermy in Ear, Nose and Throat Disease. *J. Laryngol. & Otol.* 1934, xlv, 73.

The author has found many more uses for diathermy in otolaryngological conditions than are commonly recognized. They range from the simple removal of synechia to the treatment of attic suppurations. An opening can be made in the antrum

through either the middle or the inferior meatus and the sphenoid and nasofrontal duct both treated by diathermy. Polyps of the nose or ear can be destroyed with diathermy very readily. Diathermy has yielded especially satisfactory results in chronic attic suppuration. Under general anesthesia the outer wall is removed by coagulation or desiccation and the pathological process within is destroyed. In mastoiditis, Norris finds the use of diathermy much to be preferred to a radical mastoid operation as it yields a high percentage of cures with conservation of hearing.

JOHN F. DELPE, M.D.

Fine, A.: A Consideration of the Recurrent Mastoid. *Laryngoscope*, 1934, xlv, 95.

The author does not accept the theory that in complete operation is the chief cause of recurrent mastoiditis. He believes that the essential factor is the development of another acute infection favored by mastoid susceptibility adjoining foci of infection, constitutional infirmity and faulty operative technique. In discussing the operative technique he strongly advises against manipulation within the antrum in an attempt to enlarge its bony opening as this destroys the mucous membrane which after subsidence of the infection returns to normal and constitutes the most effective barrier to re-infection.

In cases of impending recurrence the treatment should include early myringotomy. When operation becomes necessary the surgeon should thoroughly explore the operative field taking care of infected areas as they present themselves, and should be prepared to do a radical mastoidectomy if necessary.

JAMES C. BRASWELL, M.D.

MOUTH

Fletcher W.: Tumors of the Oral Cavity (Einiges ueber Geschwuelste der Mundhoehle). *Arch. Chir. Orls.* 1934, l, 503.

The purpose of this article from the Bologna Dental Clinic is to discuss tumors presenting difficulties in clinical and histological diagnosis mainly because of their rarity.

Lip. In 35 per cent of all cases, carcinoma of the lip develops from a leucoplakia. A fifth of all cases of carcinoma of the lip are those of syphilis. The mixed tumors which are frequently regarded with suspicion are benign.

Tongue. Leucoplakia is the primary condition in 33 per cent of the cases, and a history of syphilis is given in 27 per cent of the cases of carcinoma of the tongue. Frequently ulcerated angiomata are erroneously diagnosed as malignant. The histological diagnosis of tuberculous ulcers presents no difficulties. The myoblastomyoma is benign. The typical horny wart of the tongue is histologically as well as clinically benign. Carcinomata with the structure of a basal-cell tumor are rare.

Mucous membrane of the cheek. Old deposits of blood pigment in chronically inflamed tissues are frequently diagnosed as malignant melanomata but

Under treatment with thyroid and tuberculin the lassitude ceased and all of the nodules on the muscles and eyelids except one disappeared. The persisting nodule was removed and found to be similar to the first specimen but contained also areas of caseation. The tonometer showed the tension in the right eye to be 17 mm Hg. and that in the left eye 17 mm Hg. Four months after the patient was first seen there was no recurrence of the nodules. No bacilli were found in the specimens, and animal inoculations were negative. The glaucoma was controlled by pilocarpine, and the intra-ocular tension remained normal.

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VIRGIL WILCOX, M.D.

Peter, L. C.: The Treatment of Retinal Detachment by Walker's Method of Electrocoagulation. A Report of Cases. *Arch Ophth* 1934, 32, 363.

Electrocoagulation offers a method of treating retinal detachment which is less traumatic, less tedious, less time-consuming and more efficient than any other method advanced. The use of Walker's needles and electrical unit has been a further refinement of the technique. While the time that has elapsed since the introduction of the newer methods has been too brief for full evaluation of these procedures, the author concludes from his experience to date that the Walker method will eventually be preferred because of its simplicity and accuracy.

Peter reports two cases of retinal detachment treated by the Walker method. The visual fields before and after operation are shown. A cure was obtained in both cases. WILLIAM A. MAYER, JR., M.D.

EAR

McKenzia, D.: Erysipelas and the Hemolytic Streptococcus in Relation to Otolaryngology. *J Laryngol & Otol* 1934, 54, 105.

The present tendency is to regard the hemolytic streptococcus as responsible not only for many acute ear and nasal sinus infections, but also for epidemic and hospital tonsillopharyngitis, erysipelas, the common forms of puerperal septicemia, and scarlet fever. According to the unitarian view which is supported by clinical experience, erysipelas and scarlet fever are both caused by the same streptococcus. This theory denies specificity to the particular strains present in these diseases and suggests that each variety represents merely a temporary sub-species evolved to suit a particular environment. The appearance of erysipelas in hospital wards is due either to another case of erysipelas or to a streptococcal infection other than erysipelas in another person or in the patient himself. Clean operative wounds are more liable to become infected than wounds already septic.

With regard to prevention the author says, "We have to combat a ubiquitous and protean organism normally present in the upper respiratory tract, whose habit ranges from perfect innocence to the most deadly virulence, and the change from friend ship or at least neutrality to enmity may take place over night." However the erogenous streptococcus is most dangerous. Practically it would seem proper to take a culture from all acute conditions of the ears, sinuses, and throat and to treat the cases with hemolytic streptococci as cases of infection to be separated from clean operative cases. Sore throat in members of the hospital staff should be regarded with particular suspicion unless cultures are negative for hemolytic streptococci. Both patients and members of the hospital staff should be warned to report a sore throat at once. If cultures are positive, these persons should be immediately isolated. With regard to the prevention of autogenous streptococcal infection at operation the author says that in acute mastoiditis the extent of the incision and dissection should conform to the requirements of the case even though another operation may be necessary later.

WALTER H. NABLER, M.D.

Guggenheim, L. K.: The Cause of Otosclerosis. Ontogenesis of the Aural Capsule. *Ann Otol Rhinol & Laryngol* 1933, 42, 117.

The author states that ossification begins in the aural capsule at or just before the sixteenth week. As in case of flat membrane bones and long cartilage bones, the appearance of bone in the capsule of the ear occurs in certain definite centers which later fuse. The first center of ossification appears in the outer part of the capsule on the beginning of the first turn of the cochlea just anteroventral and medial to the round window. The area around the stapedial footplate particularly the part anterior to the stapes, is among the last areas to ossify.

metastasis or the radiosensitivity of metastases which have already been formed. Secondary implantations should be prevented if possible.

Tumors located in the mouth and pharynx are as a rule quite radiosensitive. Pharyngeal tumors are much more sensitive to irradiation than their grading indicates. In an effort to produce palliation in cases of pharyngeal tumor, the author uses the Coutard plan with a filter of 0.75 mm. of copper and 1 mm. of aluminum thereby cutting down the total time of treatment appreciably. Half an erythema dose is given over the same area on the neck daily until from ten to twelve such doses have been administered.

The mechanism by which the regression of carcinoma in a lymph node is brought about seems to be quite different from that operating in the primary lesion probably because of the difference in the arrangement of the blood supply in the tumor bed. Although heavily filtered irradiation delivered in large doses causes the enlarged glands to shrink, recurrences are the rule. In cases without palpable cervical lymph nodes it is the author's custom to administer heavy external irradiation to the neck with deep X rays and radium packs at the same time that the primary lesion of the lip is treated. The dosage is sufficient to cause a marked desquamation of the superficial layers of the skin. If involvement of the cervical glands appears later—which is rare in cases of cancer of the lip—a block dissection is advisable. When operable malignant lymph nodes are found in the neck at the patient's first visit, operation should be advised. Patients having numerous involved glands, glands attached to underlying structures, and involved glands on both sides of the neck are not considered operable. When at the time of operation the surgeon believes that he may be leaving malignant tissue behind radon implants or small platinum radium needles may be used in the suspicious regions. The inoperable cervical nodes are an irradiation problem which is not very hopeful. The author uses a combination of external and internal sources. Long platinum needles containing 0.6 mgm. of radium per centimeter of active length are inserted beneath and well beyond the involved nodes at intervals of from 1 to 1.5 cm. and left in place for seven days. A 100-mgm. radium pack with the radium placed in platinum capsules with 1 mm. walls is then applied to the neck over the involved nodes at a distance of 3 cm. from the skin and left in place for thirty-six hours. In addition, both sides of the neck from the upper jaw to the clavicles are given an erythema dose of X ray irradiation generated at 200 kv. and filtered through 0.75 mm. of copper and 1 mm. of aluminum at a 50-cm. target skin distance.

JOSEPH K. NARAT, M.D.

PHARYNX

Allan W. B.: Nasopharyngeal Fibroma. *Arch Otolaryngol.* 1934 xix, 210.

The author states that the nasopharyngeal fibroma is an extremely vascular tumor found most fre-

quently in adolescent boys. It is composed chiefly of connective tissue, and its many blood vessels are almost or entirely devoid of a contractile coat. Its origin is connective tissue in the vault of the pharynx and the posterior nasal space. Profuse hemorrhage may result from sloughing or trauma. In early adult life there is evidence of retrogression which may be due to a change in blood supply brought about by the ossification of the cartilaginous plate between the sphenoid and the occipital bone. In New York City a nasopharyngeal fibroma is found in only about 1 of 16,000 patients complaining of disturbances of the nose and throat. Tumors of this type are found definitely more often in males than in females. They may undergo sarcomatous or carcinomatous changes.

Surgical removal has led to facial deformity and loss of life from hemorrhage and shock.

The implantation of radon seeds into the base of the tumor is the treatment of choice.

JAMES C. BRADWELL, M.D.

NECK

Andersen, W. T.: Studies on Blood Sugar and Glycosuria in Exophthalmic Goiter. *Acta med Scand.* 1935 Supp. lv.

The author bases his conclusions on twenty-seven cases of toxic goiter four of the forme fruste, one of exophthalmic goiter with diabetes and one of myxedema complicated by diabetes and bronchial asthma. In addition, he carried out glucose tolerance tests on eight healthy young adults.

In the thirty-one cases of exophthalmic goiter he ascertained (1) the frequency of glycosuria, (2) the fasting blood-sugar level, (3) the glucose tolerance and (4) the threshold of sugar elimination.

In seven of twenty-six cases of exophthalmic goiter sugar was found in the twenty-four-hour specimen of urine but in five there was only a trace. A persistent moderate amount was found in only one.

Of the four cases of the forme fruste type of goiter a trace of sugar was found in the twenty-four hour specimen of urine in only one. In one of these cases glycosuria was never found.

There was no patient with exophthalmic goiter whose urine did not show sugar in one or more specimens.

After thyroidectomy, there seemed to be a tendency toward a diminution of the glycosuria.

The average fasting blood-sugar levels are close to normal in toxic goiter, but in individual cases the extreme variations show a tendency to be higher and to vary more markedly than in normal persons.

The glucose tolerance tests in exophthalmic goiter showed the same shift toward higher and more persistently increased blood-sugar values. In 50 per cent of the normal persons the maximum blood sugar value was between 140 and 160 mgm. whereas in 50 per cent of the patients with goiter it was between 190 and 230 mgm.

Threshold values, that is, the blood sugar level at which sugar appears in the urine are probably

somewhat lower in exophthalmic goiter than in diabetes, and possibly even somewhat lower than normal. After thyroidectomy the threshold is somewhat raised.

In the case of exophthalmic goiter complicated by diabetes the insulin requirement fell strikingly after thyroidectomy. However when the administration of thyroid became necessary the insulin requirement rose again. The threshold was higher after thyroidectomy than before the operation or after the administration of thyroid.

The patient with myxedema complicated by diabetes also showed an increase in the threshold value and insulin requirement when thyroid was given.

F. S. MOORE, M.D.

Jackson C. and Jackson, C. L. Chronic Laryngeal Stenosis in Children. *Surg Clin North Am* 1934, 21: 27.

The authors report three cases of chronic laryngeal stenosis in children due to improper tracheotomy in which the incision went through the cricoid cartilage. The constant wearing of a cannula in contact with the subglottic tissues, which are prone to swell, causes edema which is eventually replaced by fibrosis. Cicatricial contraction may take place even to the point of complete obliteration of the lumen by stenosis. As the trachea contains no such sensitive tissue, stenosis practically never follows a tracheotomy performed properly.

The great difference between chronic laryngeal stenosis in children and adults is due to the fact that in children the larynx is not fully developed whereas in adults it has already attained its full growth. The larynx of a child with stenosis will not grow until it is forced to do so by the child's breathing through it. This may be brought about by corking of the trache-

otomy cannula—a procedure introduced by Jackson years ago. The corks are graduated to permit a by-passage of air sufficient to supplement the air taken in through the larynx. While the corking is being carried out, direct laryngoscopic dilatation is done two or three times a week.

Laryngeal stenosis is best prevented by avoidance of the so-called high tracheotomy which goes through the larynx itself. Tracheotomy is apt to be done poorly when it is delayed too long and is then performed in a hurry usually by the stabbing method. It is performed correctly only when it is done below the first ring of the trachea. Jackson's finger-guided operation is both quick and non-mutilating to the larynx. In this procedure the front of the neck is split open and the index finger of the left hand is used to direct down to the larynx and trachea. The trachea is then incised by placing the scalpel along the left index finger and the incision made at the proper site.

The first step in the treatment of stenosis is a proper low tracheotomy. Dilatations are then started and the cannula is gradually corked completely. After a test period of three or four months the cannula is removed and the fistula allowed to remain. After a year or so the fistula is closed by a plastic procedure. Sometimes laryngostomy is required. This consists in the formation of an open trough which is epithelialized and as soon as an anterior wall has been constructed by a plastic procedure will form an airway from the larynx into the trachea. Rubber tubes or plugs of increasing size must be introduced into the airway to maintain a lumen until the airway is properly epithelialized. To obtain a cure, these steps must be followed by long-continued care of the patient by trained assistants and specially trained nurses. MATTHEW MARTIN, M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS, CRANIAL NERVES

Dahl Iverson E. The Diagnostic Value, Dangers, and Complications of Encephaloveniculography (Valeur diagnostique dangers, et complications de l'encephaloveniculographie) *Lyon chir.*, 1933 xxx, 670

The author reviews the literature on the dangers, complications, and diagnostic value of encephalography and ventriculography describes the various techniques for these procedures, and emphasizes the dangers of employing irritating contrast substances.

The dangers of ventriculography in cases of cerebral tumor are considered to be sufficient to contra-indicate the use of the procedure for localization when this can be accomplished by any other means or its use merely to confirm a clinical diagnosis.

The author believes that ventriculography is contra-indicated in cases of advanced tumor, particularly those associated with weakness coma or cardiac or respiratory difficulties. He states that in cases with increased tension great care should be taken to maintain an even tension throughout the procedure.

Encephalography is contra-indicated in cases in which there is a pressure of more than 30 mm. Hg in the horizontal position and those in which a lesion in the posterior fossa or situated basally in the middle fossa is suspected.

Both procedures are contra-indicated by grave arteriosclerosis infectious fever, and active pulmonary disease.

In conclusion the author emphasizes that neither procedure should be used until all other diagnostic aids such as careful neurological examination, ophthalmological studies and ordinary roentgenographic examination have failed.

HALE HAVEN M.D.

Radonci A., and Meller O: Liquorography in Man Attempts at Encephalography by the Suboccipital Injection of Thorotrast (La liquorographie chez l'homme essais d'encephalographie par le thorotrast en injection sous-occipitale) *Presse med.* Par 1934 xlii 153

In the belief that encephalography and ventriculography with the use of air as the contrast medium may lead to error in diagnosis, especially in the differentiation between certain frontal lobe tumors and cerebellar neoplasms the authors experimented with the use of thorotrast as a contrast substance in the subarachnoid space. They carried out their investigation on animals and in clinical cases and in this article report their clinical and histopathological observations.

After convincing themselves of the safety of thorotrast (thorium dioxide) given by the intravenous route and used for intracranial arteriography they injected small amounts into the subarachnoid spaces of animals by the suboccipital route. They were able to trace its absorption from the spinal fluid by repeated roentgenograms. As long as thirty days after the injection the contrast substance was noted in the dural network the arachnoidal prolongations about the spinal nerve roots, and the lymphatics about the prevertebral ganglia. Some of it remained indefinitely in the nervous system encysted in the reticulo-endothelial cells of the meninges. Following the subarachnoid injection, particles could be found extending along the small vessels into the cerebral substance but seemed to be arrested after a short distance. They were never in the deeper Virchow Robin spaces.

The technique used by the authors in clinical cases was that of cisternal puncture with the removal of 10 c.cm. of cerebrospinal fluid and its replacement with 10 c.cm. of thorotrast. It was found that an increase in the amount of thorotrast above 10 c.cm. was associated with some risk. After the injection the patient was kept in a head-down position for fifteen minutes to facilitate diffusion of the contrast substance over the hemispheres and into the ventricles. The day after the injection all of the patients had a marked meningeal reaction with headache vomiting and fever. After roentgenography the authors practiced lumbar puncture in an attempt to remove all of the contrast substance possible but found this a rather useless procedure. They state that over the course of a few days the patients gradually adjusted themselves. Ultimately the symptoms were completely relieved and there were no permanent ill effects. However repeated spinal punctures were done at the first sign of increased intracranial tension during the period of reaction.

In conclusion the authors state that the thorotrast at present available is not eminently suited for subarachnoid injection because of its physical properties and the reaction which follows its use. However they believe that further refinements in the colloidal preparation itself and in its application may be worked out so that the method will become a valuable adjunct in the diagnosis of nervous disease.

HALE HAVEN M.D.

Munro D. The Diagnosis, Treatment and Immediate Prognosis of Cerebral Trauma An Introductory Study of 144 Cases. *New Eng. Land J. Med.*, 1934 ccc, 287

This article is a review of 1,404 cases of cranio-cerebral injuries treated at the Boston City Hospital in a period of four and a half years. Nine hundred

and eighty nine cases were treated on the general surgical service and 305, the more serious cases on the neurosurgical service. In the former the general mortality was 17.6 per cent and the mortality exclusive of the deaths occurring within twenty four hours was 5.7 per cent. In the latter these mortality rates were 15.6 and 9.9 per cent respectively.

The standard treatment of the usual forms of brain injury consisted in measures to combat surgical shock followed by a combination of therapeutic dehydration and decompression by repeated lumbar drainage. In cases of compound fracture the diagnosis was made by palpation. X-ray examination often being postponed until the second or third week. In cases of suspected extradural hemorrhage roentgenograms of the skull may be of value if a linear fracture is shown crossing the region of the middle meningeal arteries. Bilateral exploratory temporal trephination is indicated to eliminate the possibility of an undiagnosed subdural or extradural hemorrhage or one of the less common types of brain injury if the patient does not respond to the measures mentioned and toxic dehydration and meningitis have been ruled out as the damaging factors.

In the cases treated by lumbar puncture alone the mortality was 9 per cent less than in similar cases treated without lumbar puncture. In over 1,000 lumbar punctures for decompression in acute brain injuries there were no deaths attributable to the procedure. Morphine should never be given when increased intracranial pressure is suspected. The author believes that increased intracranial pressure does not aid in the prevention of bleeding from the cerebral vessels. He concludes that therapeutic dehydration is suitable for traumatic edema of the brain, and that in combination with decompression by lumbar puncture, it is suitable for traumatic contusion and laceration of the brain.

ROBERT ZOLLMER, M.D.

Cox, L. B.: Observations upon the Nature, Rate of Growth and Operability of the Intracranial Tumors Derived from 135 Patients. *Med J Australia*, 1934, 1, 183.

The author summarizes this article as follows:

1. The intracranial tumours derived from 135 patients have been examined and classified according to the modern classification. The percentage incidence of the various groups is compared with that of similar groups encountered elsewhere.

The frequency of secondary carcinoma as a cause of brain tumour in Victoria is commented upon. The present rarity of the large gumma and of the isolated tuberculoma is also noted.

2. The histology of the various groups is briefly described. It is suggested that certain of the modern names, based upon the appearances of embryogenesis, are not applicable.

The frequency of undifferentiated glioma types, as yet unnamed and unclassified, is commented upon.

3. The duration of growth of the various tumour groups as estimated from the appearance of the first clinical sign until the death of the patient or in the case of the survivors, until the time of writing, has been investigated. The majority of the tumours conform in this respect to the results obtained by other workers. Attention is, however, drawn to a type of cerebellar medulloblastoma of much slower growth than is usually recognized.

The rapid course of many of the astrocytoma arising in the cerebral hemispheres is contrasted with the slow course of those encountered in the cerebellum.

4. In reference to age incidence it was found that the slowly growing cerebellar medulloblastoma are by no means confined to early life, while several meningeal fibroblastoma were found to have arisen in childhood and in young adult life.

5. The operability of the various tumours is discussed. The generally favourable outlook of sub-tentorial tumours is contrasted with unfavourable outlook of the tumours encountered above the tentorium.

6. Those indications which suggest that a tumour may be of a type favourable for surgical removal are briefly mentioned.

LEO M. DAVENPORT, M.D.

Echlin, F.: Cranial Osteomata and Hyperostoses Produced by Meningeal Fibroblastomata. A Clinical Pathological Study. *Arch Surg* 1934, 119, 357.

Osteomata of the skull are relatively rare tumors arising from the pre-osseous tissue on the surface of the skull. They occur at an early age and grow slowly. They frequently take origin from the frontal bones, but may arise also from other bones of the skull. They are of two types, the spongy and the eburnated. Those of the spongy type usually cause an absorption or spongy change of the outer table of the skull and become continuous with the diploe. With this change the inner table may become thickened and slightly depressed. However the depression of the inner table is not sufficient to give rise to symptoms of intracranial pressure. The bone formed is of the young type. Frequently a cap of fairly dense bone is formed over the tumor. In the roentgenograms the absorption of the outer table of the skull is very distinct and some of the tumors show a radial spicule formation near the surface. The osteomata which occur in elderly persons are usually of the dense eburnated type.

The hyperostoses accompanying meningeal fibroblastomata are bony tumors initiated or stimulated by the presence of the underlying meningeal tumor. Frequently and particularly when they become very large, they are infiltrated with cells from the underlying fibroblastoma. The excess bone formation may be in the nature of a stroma formation for the tumor cells. These formations, like the osteomata, arise chiefly in the frontal region, but they occur at a much later age than the osteomata. In

the roentgenograms the tables of the skull are seen to be fairly well preserved, but show a haziness and increased porosity. Spicules of bone radiate outward, producing a very characteristic appearance. There may also be spicules radiating inward.

Cranial osteomata and hyperostoses produced by meningeal fibroblastomata may be distinguished from each other on the basis of the history, the patient's age, the presence or absence of intracranial symptoms, and the X ray findings. They must both be differentiated from osteomyelitis, osteogenic sarcoma, metastatic tumors, giant-cell tumors, osteochondromata and syphilitic tumors of the skull.

JOHN W. EYROW, M.D.

PERIPHERAL NERVES

Collin: Delayed Injuries in the Region of the Ulnar Nerve Following Injuries of the Elbow or Arthritis Deformans, with Special Consideration of the Compensation Aspect (*Spätschädigungen im Gebiete des Nervus ulnaris nach Ellbogenverletzungen bzw. Arthritis deformans mit besonderer Berücksichtigung der Unfallbegutachtung*). *Arch. f. orthop. Chir.* 1933 xxxiii 331.

A diagnosis of delayed injury to the ulnar nerve is made when there has been a latent period between the trauma and the onset of local or nerve symptoms. This latent period usually varies between ten and thirty five years, but there are reports of cases in which signs of involvement of the ulnar nerve became apparent following a latent period as short as one year and as long as fifty years. In the majority of cases the causative agent is a previous trauma to the elbow or arthritis. Other etiological agents are the traction of a scar burnitis, the presence of a second bone in the internal lateral ligament, purulent inflammation of the elbow joint, proliferating lesions following scarlet fever and chronic articular rheumatism.

The familiar picture of palsy of the ulnar nerve in all of its forms and with all of its sequelae is described.

Ulnar palsy occurs most commonly after injuries to the elbow in which there is a supracondylar fracture of the humerus, but may occur also after luxation, fracture of the medial epicondyle, or dislocation and fracture of the coronoid process. The late injury is caused by deformity of the joint brought about by callus formation which in turn leads to cubitus valgus. In practically all cases the nerve is found thickened above and in the ulnar groove, and microscopic examination reveals a perineuritis and an interstitial neuritis with degeneration of the apparently compressed nerve fibers.

Successful and unsuccessful results have followed both conservative and operative treatment. In the author's opinion the operation of choice is neurolysis or resection of the nerve and its transplantation anteriorly. In this operation the nerve is placed in a bed of fat beneath the fascia. Plastic operations on the tendons for correction of the claw hand in palsy of the ulnar nerve have been unsatisfactory. To

improve the results of operation and also for entirely conservative treatment of claw hand, especially constructed splints, bands, and bandages are of value.

Arthritis deformans is regarded by the author as a degenerative disease—a local sign of aging. It occurs in joints which are no longer able to meet the demands for repair required by ordinary use. The diagnosis of arthritis deformans can be made only when the roentgenogram shows the typical changes in the bone and cartilage—atrophy, hypertrophy of the periosteum, and resorption of bone.

Primary arthritis is a generalized disease which involves several joints in the absence of a demonstrable cause. Secondary arthritis deformans may follow any injury to a joint. The presence of secondary arthritis deformans is to be assumed when only the traumatized joint presents arthritic changes and the other joints are normal. It is then a sequela of injury only if the primary joint condition was of traumatic origin. When the acute stage is brought on by an injury during the course of chronic arthritis deformans, only the acute condition is to be regarded as due to the injury and as justifying compensation.

The author reports three illustrative cases of delayed palsy of the ulnar nerve in which the development of the condition permitted the differentiation between the primary and secondary types of arthritis deformans. Arthritis deformans of the secondary type is present when there is a history of trauma to the elbow of the palmar arm and only the traumatized joint shows chronic changes.

In conclusion the author reports two cases of delayed palsy of the ulnar nerve which resulted after many years of the use of compressed air machinery. This form of occupational arthritis develops in both elbow joints and as it may result in delayed palsy of the ulnar nerve, is an injury for which compensation should be paid.

A. FRAENKEL (Z)

SYMPATHETIC NERVES

Libman, E.: Observations on Individual Sensitiveness to Pain. *J. Am. M. Ass.*, 1934, cl, 335.

Libman discusses individual sensitiveness to pain, substitution symptoms, and radiations of pain. As a simple method of gauging sensitiveness to pain, he employs the "styloid pressure" test. Briefly, this is carried out by first pressing the thumb against the tip of the mastoid and then slipping the finger forward and pushing against the styloid process. Pressure on the normal mastoid causes no pain and therefore serves as a control. Pressure in the direction of the styloid process is painful to some persons and not to others. The sensitive point is really not the styloid process, but a branch of the auricularis magnus nerve.

According to the response to the test individuals are placed in one of three groups. In the first group are those who show no evidence of pain and state that they feel no pain. The second group includes those who show little evidence of pain and also those who show no evidence of pain, but in response to

questioning state that they had slight pain. In the third group are those who show evidence of marked pain.

The sensitiveness determined by means of the test is regarded as the natural sensitivity. Sensitizing and desensitizing factors must also be taken into consideration. These may be due to endogenic and exogenic influences. All of these influences may have a local or a general effect or both. Endogenic factors include worry, fear, anger, fatigue, diversion of attention, joy, local infection, intoxicants, and endocrine influences. Among exogenic influences are all persons or conditions that affect an individual in one way or another: trauma, and meteorological changes.

Desensitization may be purposefully brought about in a number of ways, one of which is the use of drugs. This may be of aid in physical examinations.

The hyposensitive patient may have what are called substitution symptoms instead of pain. These are of two types—true substitution symptoms and covered symptoms. The former include all symptoms that might be considered representative of pain, such as burning, pressure, numbness, prickling, tingling, pruritus, and ticklishness. Covered symptoms are of three kinds: (1) those that appear in hyposensitive patients when pain is not predominant; (2) symptoms of one focus of the disease process which cover those of another focus in

cases of multiple foci; and (3) symptoms of one disease which cover those of another disease present in the same case. Of great interest is Libman's finding that contralateral pains, contralateral radiations, and inverse radiations are all characteristic of the hyposensitive state.

The author speaks of the great clinical value of induced sensitization and induced radiation. When a part of the body is pressed on in order to bring out tenderness, the mistake is usually made of merely inquiring whether or not pain is felt. It is essential to ask also whether any pain is felt and how it radiates. In this way the localization of the site of trouble may be made easier.

With regard to visceral disease, attention is directed to the frequency of symptoms referable to the autonomic nervous system, many of which are brought about by reflex mechanisms and many of which occur in hyposensitive persons. Instead of pain, there may be symptoms due to spasms of the cardia, pylorus, ileocecal junction, or sigmoid flexure with such manifestations as eructations, aerophagia, yawning, and hicough.

Summing up Libman states that the difference between the hyposensitive and sensitive patient is that in the latter the impulses travel more directly into the central nervous system whereas in the former they seem to be delayed in the autonomic system or linger there. JACON M. MORRIS, M.D.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Hertzler, A. E. Chromatophore (Myo-Epithelial)
Tumors of the Mammary Gland *Arch Surg*
1934, XLVII, 307

The author designates as chromatophore tumors a group of globular cancers of the breast which resemble melanomata in their histological structure and life history. He reports a case of tumor of this type which apparently arose from cells lying beneath the surface epithelium of the intracanalicular papillations. The case history is supplemented by photomicrographs of the primary tumor and recurrences. Tumors of this type do not metastasize to bone. Hertzler believes that intracanalicular fibro-adenomata may give rise to malignant tumors of the chromatophore type. However, such tumors do not form pigment. J. FRANK DOUGHERTY M.D.

Dawson, E. K. and Tod M. C.: The Prognosis in Mammary Carcinoma. *Edinburgh M J* 1934, XI, 61

Cure or prolongation of life in cases of carcinoma of the breast depends on the possibility of removing, killing, or blocking the malignant cells and this possibility depends on the stage the growth has reached when the patient presents herself for treatment. The prognosis is therefore related to the type of treatment and to the clinical and histological grading of the lesion at the time of operation.

The scale of clinical grading generally employed by the authors is as follows:

Grade 1. Malignant growth limited to the breast. No involvement of the axillary lymph nodes.

Grade 2. Cases with involvement of the axillary lymph nodes.

Grade 3. Cases with involvement of the axillary lymph nodes plus involvement of other lymph nodes, the pectoral muscles, or the skin.

Grade 4. Cases with metastases to the lungs, bones, or other parts.

The authors point out that it is impossible to determine the extent of the disease accurately after involvement of the axillary lymph nodes has occurred. Therefore cases of Grades 2, 3, and 4 are often clinically indistinguishable, and a good prognosis can be given only in those of Group 1.

Various authorities have claimed that other factors being equal the prognosis can often be determined on the basis of the cytological appearance. The existence of a differentiated type of cell, fibrosis, and lymphocytic infiltration has been considered to indicate a good prognosis. The authors take the view that the prognosis can be determined better by correlating the topographical and cytological features rather than by considering the latter

alone. Their method takes into consideration the position of the malignant cells in relation to ducts, stroma, lymph vessels and blood vessels, and therefore sheds light on the relationship of structure to the type of growth and the stage of spread.

The relationship of this method of histological grading to the clinical grades summarized as follows:

Grade 1. The earliest stage of malignant growth is confined within the tubular glandular structures of the breast regardless of the type of cell. The next stage shows rupture of the duct walls and infiltration of the periductal tissues.

Grade 2. This stage shows actual invasion of the lymph stream in the breast itself and is almost invariably associated with invasion of the axillary nodes. Histological examination of the latter determines whether or not the growth has reached Grade 3.

Grade 3. This stage is inferred from the histological findings in the breast and axillary tissues.

The authors' views with regard to treatment in relation to the prognosis are next discussed. For early cases in which the lesion is confined to the breast and there is no involvement of the axillary lymph nodes, the accepted radical operation consisting of removal of the breast, both pectoral muscles, the axillary contents and adequate portions of the deep fascia and skin is recommended. Wide removal of the skin is important as sections of the entire breast often show carcinomatous spread along Cooper's ligaments in a fan shaped extension from the tumor toward the skin. The use of the endothermy knife is advocated not only because it seals the blood vessels and lymphatics but also because it saves time and labor and the material required for the ligation of small vessels.

For more advanced cases postoperative irradiation is recommended. The use of combined internal and external irradiation as a pre-operative measure in addition to postoperative irradiation shows considerable promise but has not been employed for a sufficiently long period to establish the results conclusively. The use of radium for local recurrence in the scar and of X ray therapy for the treatment of distant metastases is recommended.

In doubtful cases simple mastectomy followed by examination of frozen sections should be performed rather than biopsy and a two-stage operation. The authors condemn the latter method as they believe that examination of a small piece of tissue is often of little value since malignant change may be present in a portion of the breast that has been left *in situ* when the removed portion is reported negative for carcinoma. As most women with carcinoma of the breast are past the child bearing age and the authors believe that removal of the breast is not so psycho-

logically important as has been claimed, they advocate simple mastectomy even if no malignant disease is later demonstrated. This, they state, is preferable to the risks involved in biopsy if an area of malignant change is not found in the section but is left in the breast.

All other factors being equal, the absence or presence of invasion of the axillary lymph nodes is of the greatest importance on determining the prognosis.

ARTHUR S. W. TUCKER, M.D.

TRACHEA, LUNGS, AND PLEURA

Wolfe, J. J., Wang, T. T. and Van Allen, C. M.: A New Principle of Pulmonary Collapse with Production of Extreme Atrophy and Cirrhosis of the Lung. *An Experimental Study*. *J. Thoracic Surg.* 1934, III, 300.

The authors report experiments carried out on twenty dogs to test, on normal lungs, a new method of pulmonary collapse whereby one portion of the lung is subjected to very vigorous compression which causes such reduction in its size and such cirrhotic changes that it is virtually obliterated by the thickening and shrinkage of its pleura.

The lobe was enclosed as far as the hilus in a loosely fitting envelope of thin rubber and then left fully inflated. The foreign body produced an intense pleural reaction so that fluid accumulated and the pleura in contact with the rubber became thickened and fibrous. The fluid collapsed the lobe and soon afterward underwent absorption, while the fibrous capsule of the lobe maintained and increased the collapse by progressively shrinking. The envelope relaxed about the lung in folds. Hyaline and fibroblastic proliferation developed in all parts of the parenchyma, and the cirrhosis progressed until all respiratory structures except the largest bronchi had been replaced by scar tissue. These tubes remained intact, although collapsed. The shrinkage was so extensive that in a few months the lobe was reduced to a very small, firm mass. The space left was filled mainly by the neighboring hypertrophied lobes and by the heart, hemidiaaphragm, and chest wall, which were slightly displaced.

The pulmonary compression obtained by this method is unique because of its independence of mediastinal stability and because of its superior forcefulness. Clinically it should have special advantages for the collapse of stiff-walled cavities of the lung and the cirrhosis may prove advantageous for healing and healing non-cavernous lesions. However further study of the parenchymatous changes and much refinement of the technique of the method will be necessary before the procedure can be applied to man.

ELIZABETH M. CRAWFORD

Kinsella, T. J.: The Future Surgical Status of the Collapse Therapy Patient. *J. Thoracic Surg.* 1934, III, 221.

The small series of cases reviewed in this article indicates that necessary surgical procedures may be

undertaken on patients treated for pulmonary tuberculosis by collapse therapy without undue risk. Emergency surgical procedures may be undertaken without delay as in the cases of tuberculous patients without collapse therapy but operations of election should be postponed until the patient has become well accommodated to the collapse and the tuberculous has become quiescent.

Local infiltration anesthesia is safest, but spinal anesthesia has been found of great aid in these cases. Spinal anesthesia to the fifth or seventh thoracic vertebra has been well tolerated. General anesthesia has been used successfully but the author believes it should not be employed if either local or spinal anesthesia or both combined will suffice. In the presence of active tuberculosis of the lungs, general anesthesia is attended by greater risk of reactivation of the tuberculosis than either local or spinal anesthesia as the deep breathing associated with general anesthesia adds trauma to the diseased areas in the lung. When only light anesthesia is necessary nitrous oxide will suffice, but the diminished respiratory reserve renders cyanosis more frequent. When deeper anesthesia is required, ethylene is to be preferred. In some cases a little ether will be necessary in addition. The use of local anesthesia supplemented by light nitrous oxide or ethylene anesthesia is to be preferred to the use of deep general anesthesia particularly in cases with secretions in the chest. General anesthesia induced with ether alone should rarely if ever be used. Deep anesthesia of any type induced to the stage at which the cough reflex is obliterated or markedly diminished should be avoided, particularly if there are secretions in the chest. High spinal anesthesia, while not obliterating the cough reflex, paralyzes the muscles used in the expulsion of secretions from the chest and thereby favors aspiration. The lung must be emptied of sputum before operation.

In general, minor surgical procedures have been well tolerated by the author's patients under collapse therapy but in a few instances they have been followed by minor disturbances, and on two occasions, once following tonsillectomy and once following the extraction of a tooth with infection, there was a definite exacerbation of the pulmonary tuberculosis.

Major surgical procedures have also been well tolerated by the majority of tuberculous patients treated by pneumothorax, phrenic nerve resection, or thoracoplasty. Practically as many of the patients have shown improvement of the chest lesions as have developed an exacerbation of the tuberculosis. In the cases in which resection of the phrenic nerve was done the operation was followed by difficulty in expectoration. This may predispose to pulmonary complications, but such an influence has not yet been noted in the author's cases. In order to prevent the trauma of deep breathing on the tuberculous lung, postoperative hyperventilation of the lungs has not been practiced routinely. Frequent changes of position and active and passive motion of the extremities

ties have been insisted upon, and all patients have been required to raise their daily quota of sputum after operation. Exacerbation of the pulmonary tuberculosis has been no more frequent after surgery for tuberculous lesions than after surgery for non-tuberculous conditions.

HOWARD A. MCKENIGHT, M.D.

Emerson, E. B.: Bronchopulmonary Suppuration
New England J. Med., 1934 ccc 365

Early tuberculosis may heal under medical and hygienic treatment alone, and the signs of bronchiectasis may be alleviated by conservative measures to such a degree that surgery will not be necessary. An abscess of the lung may drain and heal spontaneously or under medical, postural, and bronchoscopic treatment.

Bronchiectasis and lung abscess are not infrequently diagnosed as pulmonary tuberculosis.

The presence of tubercle bacilli in the sputum is the only positive proof of tuberculosis of the lung, but failure to find tubercle bacilli in the sputum does not prove the absence of pulmonary tuberculosis.

The differential diagnosis between pulmonary tuberculosis, bronchiectasis, and lung abscess may require some time. In cases of bronchiectasis and lung abscess it is often difficult to determine which was the primary disease and which the complication. Pulmonary tuberculosis, bronchiectasis, and abscess of the lung may co-exist.

A lower lobe lesion without definite signs of tuberculosis in the upper lobe is almost always non-tuberculous. A lesion in the upper lobe may be considered tuberculous until it is proved to be of some other nature. In obscure cases with a negative sputum a bronchoscopic examination and a roentgen examination with the use of lipiodol should be made before the patient is subjected to long and tedious observation and treatment.

The term bronchopulmonary suppuration is employed by the author to include both abscess and bronchiectasis as the two conditions tend to cause each other and are frequently found together.

Bronchiectasis is a chronic disease with an insidious onset which usually starts in early life without obvious cause and at first produces only moderate symptoms and little discomfort. A lung abscess is relatively acute and often appears to follow some obvious cause. In from 25 to 40 per cent of cases it follows a recent surgical disease for which operation was performed. In some cases it is characterized by remission and exacerbations of the symptoms.

The author reports six cases of bronchopulmonary suppuration which were seen in the Rutland State Sanatorium of Massachusetts. In three, a cure was obtained by pulmonary lobectomy and in two the symptoms were relieved by bronchoscopic aspiration. One patient was not benefited. In one case in which the cause of the abscess was believed to have been pneumonia following influenza eleven years previously a tooth was found in the lung at autopsy.

G. PAUL LAROCHE, M.D.

Miller, J. A.: The Pathogenesis of Bronchiectasis
J. Thoracic Surg., 1934, III, 246.

At birth the lungs consist of a very considerable proportion of interstitial tissue traversed by the bronchi spreading out fan wise from the root of the lungs and terminating in the buds of the fetal bronchial tree which are distended with the first breath after birth, forming rather large alveoli in comparatively small numbers. As the lung develops after birth, new branches are formed in the peripheral part of the bronchial tree and from these branches new alveoli are constantly developed. As this centrifugal growth continues the original alveoli of the infant become the walls of the non-respiratory bronchioles of the adult, and the peripheral bronchioles of the infant become the re-inforced cartilaginous bronchi near the roots of the adult lung. The infantile lung, therefore, is not a minute copy of the adult lung but corresponds more nearly to the structures in the adult which are near the hilum.

Individual constitutional as well as racial factors may determine the rate and manner of this lung differentiation. There is a great individual variation in the rate at which children grow out of the infantile lung period the time required ranging from three to fourteen years.

The relative extent of the lung involved by disease in the early infantile period is markedly influenced in the rate and character of the future differentiation.

If at any time during the prenatal period there is interference with normal bronchial branching, no terminal bud formation occurs. The opening up of the lungs at birth will be opposed by bronchioles, the walls of which cannot be disrupted and the lining of which cannot be shed, and instead of air-space formation bronchial distention will take place. Thus bronchiectasis develops into so-called cystic disease of the lungs. As a rule, bronchiectases and cysts occur alongside each other.

When the respiratory function of the lungs first becomes established at birth larger or smaller lung areas may fail to open and may remain atelectatic. Such congenital atelectasis was for many years held to be the chief cause of bronchiectases originating in very early infant life. There is still dispute regarding it. The lower posterior paravertebral parts of the lungs, particularly on the left side, are the most common sites of atelectasis in infants.

As life goes on functional factors come to play an increasingly important rôle in the determination of the fate of bronchi handicapped in their development or damaged by disease in early life. The rôle of the bronchi in pulmonary function consists mainly in bronchomotor activity and collateral respiration.

The loss of the capacity for spontaneous and efficient bronchial contraction and distention and of normal inspiratory and expiratory bronchial movements is associated with loss of the ability of the bronchi to empty their contents of normal secretion from the bronchial mucous membrane and the large amount of foreign matter constantly inhaled. Thus

the normal cleansing power of the lung is lost, and tissue fluids and secretions accumulate and stagnate in the affected air passages.

English clinicians have been disputing the question as to whether expiratory push or inspiratory pressure is the main mechanism distending the bronchi. The force chiefly responsible for keeping a functionally incapacitated and atrophic bronchus open is thoracic suction.

The quantity of fluid poured into the lungs from the blood is estimated to be about 800 c cm daily. Normally this is evaporated from the lungs. In addition to this fluid a very considerable amount of bronchial mucus secretion and a large amount of inhaled foreign matter must be taken care of by the lungs if the bronchi are to function normally. The normal self-cleansing power of the lungs is extraordinary but when the bronchi become functionally incompetent their lumina are permanently widened and their elasticity and movements are markedly impaired. These changes are particularly marked in the postero-inferior portions of the chest, where the tendency of the normal moisture to gravitate is greatest. These lower and posterior portions therefore become veritable gutters of the lung, and as they are the portions most apt to be affected in developmental disturbances, the frequency of bronchiectasis in these areas is explained.

It is to be emphasized that clinical bronchiectatic disease depends on failure of adequate drainage. Bronchial dilatation alone does not as yet constitute bronchiectatic disease.

With failing drainage and the accumulation of moisture inequality of air distribution becomes operative in the affected air passages and the lung areas they supply. Interference with the normal entrance or exit of air results either in emphysematous distention or collapse and oedematous imbibition in other sections.

Cough serves to discharge the bronchial contents and often by a forcible inward air movement, may re-inflate collapsed lung areas. It may also drive the bronchial contents still farther downward. It is the greatest force that can arise in the lungs.

Bronchial function will fail equally if the bronchi are unable to discharge their air contents inward because of distal obstruction when the corresponding lung areas are collapsed and indurated or outward because of proximal bronchial obstruction.

The abnormal conditions in the bronchi, whether caused by developmental factors or by disturbance of the functional efficiency of the bronchi, constitute the basis for the destructive processes which later result in bronchiectatic disease. These destructive influences are due to infection. Two periods of infection are recognized: (1) the infection of childhood, with characteristic bronchial, pneumonic, and interstitial processes, and (2) the period of bronchiectatic disease with its characteristic destruction of the bronchial walls.

In pulmonary infection in adults a large portion of the exudate in the alveoli is absorbed completely

after subsidence of the inflammation. In pulmonary infection in children, the interstitial framework and its extensive interlobular and peribronchial tissues are more frequently invaded and there is severe involvement of the lymphatic channels and neighboring lymph nodes which blocks lymphatic drainage and frequently interferes with the free intake of air into the more severely involved bronchi. As such conditions resolve with much greater difficulty pulmonary infections in childhood result much more frequently in chronic more or less permanent, pulmonary sequelae. According to recent studies, the types of infection which are most apt to lead to chronic changes are the influenza, the mixed influenza and streptococcal and the bronchopneumonias associated with measles and pertussis. Adult bronchiectatic disease, however, often represents the direct sequelae of bronchial destruction occurring in infancy or childhood.

There is much evidence indicating that for the development of bronchiectasis in adults, bronchial destruction in childhood must be supplemented by some other condition. Schneider emphasizes that in every bronchiectatic lung however extensive the lesions, it is always possible to find adjacent bronchi in the purely atrophic state of bronchial dilatation and bronchi showing the first phase of the infectious pathological lesions, and these early changes are in the subepithelial layer of the bronchial wall, under the intact mucous membrane.

The usual causes of bronchial obstruction are tuberculous, acute inflammatory and anthracotic enlargement of the tracheobronchial glands, inhaled foreign bodies, neoplasms, and aneurism of the aorta. After mechanical obstruction, infection becomes particularly damaging and the destructive processes go on even more rapidly than in cases without obstruction.

Any of the ordinary pyogenic organisms of respiratory disease may produce destructive processes in the lungs.

It is well known that persons with chronic infection of the sinuses, tonsils, or teeth are susceptible to recurrent attacks of bronchitis and bronchial pneumonia. When such persons have already damaged or functionally inefficient bronchi the likelihood of the development of true bronchiectatic disease is greatly increased.

J THORNHILL WITHERSPOON M D

Bowman, C.: Primary Carcinoma of the Lung. *Brit J Med Sci* 1934, N 98, p 40

A review of the history of primary carcinoma of the lung goes back to reports made in 1410 of lung disease clinically simulating pulmonary cancer which occurred in persons working in the Schneeberg mines in Saxony. The first autopsy in a case of cancerous ulcer of the lung was reported by Morgagni in the eighteenth century.

The number of cases of carcinoma of the lung coming under observation is far greater today than in the past. The condition is most frequent at about the

fiftieth year of age and is four and a half times more frequent in males than in females. Laborers and other outdoor workers are most often affected. The Schneeberg mines have been worked since 1410. The mine dust contains bismuth, metallic sulphides of iron, arsenides of cobalt and nickel, copper, tin, zinc, manganese, quartz and uranium.

Individual factors considered in relation to the etiology of cancer of the lung are arsenic, fungi, silicosis, minerals such as bismuth, nickel and cobalt, the inhalation of particles of any type, any form of inflammation of the respiratory tract, the influenza epidemics of 1918 and 1922, tuberculosis, syphilis, trauma of the lungs, tar fumes (especially from tarred roads) and heredity. No definite conclusions are drawn by the author with regard to the cause of the condition.

The origin of primary carcinoma of the lung is the bronchial system. In 96 per cent of the cases the growth occurs at the bifurcation of the trachea. In the remaining 4 per cent it is located deep in the lung substance.

The classification suggested by the author is as follows: (1) large columnar-cell carcinomata derived from superficial cells lining the bronchi; the (2) squamous-cell carcinomata occurring possibly following post-inflammatory metaplasia; (3) adenocarcinoma of the bronchial mucous glands; and (4) small-cell or oat-cell growths derived from the basal-cell layer.

In the diagnosis, roentgenography is of great aid, especially when its findings are correlated with the physical signs and the history. A further aid to diagnosis and to localization of the growth is the endotracheal injection of lipiodol for the detection of bronchial occlusion.

The use of the bronchoscope is valuable as in early cases the diagnosis may be confirmed by bronchoscopic biopsy.

The author reviews the clinical observations in eleven cases and reports four cases in detail.

Treatment is difficult because of the inaccessibility of the tumor, the early occurrence of metastasis, the easy dissemination of the tumor cells by the arterial system, and the biological function of the lung. Extirpation by lobectomy is possible in only a limited number of cases. The intravenous injection of lead selenide has been tried. X-ray irradiation and the implantation of radon seeds with the bronchoscope may be of value. The prognosis is extremely unfavorable.

J. DUNCAN WILLIAMS, M.D.

Graham, E. A.: The Diagnosis and Treatment of Primary Carcinoma of the Bronchus or Lung. *Am. J. Roentgenol.* 1934, xvi, 145.

Primary carcinoma of the lung constitute between 5 and 10 per cent of all carcinomata. They are therefore comparable to carcinomata of the large intestine and other carcinomata which have received far more attention. They are probably often overlooked even at autopsy because the complicating features of pulmonary suppuration may overshadow

the carcinoma to such an extent that even the possibility of the presence of such a condition may not be considered. The origin of primary carcinoma of the lung is still under discussion. There is no doubt that practically all, if not all, of the neoplasms arise in a bronchus. The bronchus which is the site of origin is usually one of the primary divisions of a main bronchus or at least one containing cartilage in its wall. Fried has collected evidence indicating that the source of the various cellular types is the undifferentiated basal cell of the bronchial mucous membrane which is the cell chiefly concerned in the process of repair of that tissue. He has cast serious doubt upon the epithelial nature of the cells lining the pulmonary alveoli which he considers to be of mesoblastic origin. According to his theory, it is impossible for a primary carcinoma to originate in the alveolar epithelium for the simple reason that there is no such tissue.

These newer ideas are markedly at variance with the older theories that some tumors arise from the ciliated cylindrical epithelium, some from the mucous glands and some from the alveolar epithelium. It seems to be well established that certain tumors ulcerate rather early and produce either stenosis or complete obstruction of the bronchus. These features have important clinical consequences because they give rise not only to the presence of blood in the sputum but also to sequelae of bronchial stenosis such as atelectasis, bronchiectasis, and abscess formation. On the other hand, a more rare type of tumor which has often been regarded as arising in the mucous glands usually grows more diffusely along and around the bronchus beneath the mucosa and is slower to ulcerate. Bronchial obstruction is said to be less frequent in this type. Metastases may occur in any organ, and often the initial symptoms and signs of importance arise from the metastatic rather than from the primary lesion. This is particularly the case with metastases to the brain and to the long bones. The most frequent sites of metastases are the pleura, the lungs, and the mediastinal lymph glands. Next in frequency, in the author's cases, are the liver, the genito-urinary system and the central nervous system. The diagnosis of primary carcinoma of the bronchus can be made in practically every instance if the possibility of the condition is considered. There are several features of the clinical history and examination which when supplemented by the roentgen findings, should arouse at least a strong suspicion of its presence. Chief among these features are the insidious onset and persistence of cough with sputum and pain in the chest in a man of middle age or older. If the sputum is blood-streaked the suspicion must be stronger but in the majority of cases it does not contain blood. If in addition to such clinical features there is a demonstrable atelectasis of a lobe of the lung, the probability of a tumor of the bronchus becomes very much greater.

It is not always possible to establish the diagnosis of bronchogenic carcinoma by a single bronchoscopic

examination often repeated examinations are necessary. In many cases other diagnostic methods, such as the use of lipiodol which may reveal the presence and the site of a bronchial obstruction or the presence of an associated bronchiectasis, are helpful. The distortion of the whole bronchial tree by the tumor may thus be observed. Artificial pneumothorax is sometimes of great assistance in the roentgenological recognition of at least the atelectatic portion of the lung. If pleural fluid is present, its examination by Mandlebaum's method is often of the greatest help especially if there are pleural metastases. This method consists in centrifugizing the removed fluid, fixing the sediment in formalin, and sectioning and staining it like any other tissue to be examined microscopically.

In the treatment there are only two possibilities. One is irradiation with the roentgen rays or radium and the other is excision. Opening up a stenosed bronchial lumen by the use of the bronchoscope will often permit aeration of an atelectatic lung and thereby result in marked temporary relief of some of the symptoms. The author protests against what seems to be the rather general belief on the part of certain radiologists that a reasonable degree of hope of cure of primary bronchial carcinoma is offered by radiotherapy. He states that a favorable result can be expected only in exceptional cases, if in any.

Although occasionally an early polypoid carcinoma may be successfully removed with the bronchoscope it seems unlikely that much can be expected from this treatment because in nearly all cases it is impossible to remove the growth completely. Theoretically a far more satisfactory method of removing the tumor would be wide dissection which would enable the surgeon to get well around the growth and at the same time remove the lymphatic vessels and glands which are most likely to be involved. This can be accomplished only by opening the thorax. To date, the literature apparently reports only six cases in which the patient survived surgical removal of the carcinoma for at least a year. The author has recently successfully removed the entire left lung at one stage. He believes this was the first case in which an entire lung was removed for carcinoma and also the first in which an entire lung was removed successfully in one stage for any cause. This operation may have advantages over lobectomy for malignant disease, at least in certain cases. It permits the surgeon not only to get well around the tumor but also to remove the mediastinal lymph glands which receive the drainage from the affected lung. JOSEPH K. NARAZ, M.D.

pleural injection of thorotrast was made. His observations may be summarized as follows:

1 The injection first produced an exudative reaction in the pleura.

2 There was a progressive and uniform opacification of the whole pleura, which could be demonstrated by various angles of roentgenographic study as an intensely opaque fine line surrounding the lung and following the contour of the internal surface of the thoracic cavity. In a laterolateral projection the line appeared double in the posterior half along the diaphragm and in the costodiaphragmatic sulcus because of projection of the various lymphatic shadows into the same plane. In some places, especially at the base, there were denser areas. In a study of the opaque pleura in the usual postero-anterior projection with the rays centered on the fourth dorsal vertebra the pleura seemed separated a few millimeters from the thoracic wall and at its upper portion, at a level corresponding to the external border of the apex, it was separated by a few millimeters from the inferior margin of the second rib. Between this margin and the opaque line there was a faint band of opacity, a secondary shadow of the second rib, which could not be identified as the opacity of the pleura. The different angles of study of the apex (such as the caudocranial and cranio-caudal) demonstrated clearly the relationship of the dome of the pleura to the inferior border of the first rib. This was visible as a fine regular line in both projections, but as the direction of the vertical rays was changed the relation of the pleura and rib changed also.

3 There was no diffusion of the opaque medium into the thoracic lymphatics which could be demonstrated roentgenographically.

4 There was no roentgenographically demonstrable communication with the other (the right) pleural cavity.

5 There was clearly demonstrated a direct communication with the abdominal lymphatics of the same side extending into the lumbar region where a large node was seen.

6 No communication was demonstrable between the lymphatics in the cardiac shadow and those of the left margin of the heart or great vessels.

The author believes that such studies of the thoracic and abdominal lymphatics will be of great value in determining the course of infections which may involve the lymphatics and also of great interest from the standpoint of physiology.

EDMUND T. LEBER, M.D.

CEPHOPHAGUS AND MEDIASTINUM

Schatzki, R.: Relief Studies of the Normal and Pathologically Changed Cephophagus (Reliefstudien an der normalen und krankhaften crarodentem Speiseröhre). *Acta radiol.* 1933 Supp. VII.

Internal depressions and elevations of the cephophagus wall may be visualized with the roentgen rays with the aid of a thin layer of contrast substance deposited on the wall. The factors which determine

Capua, A.: A Study of the Lymphatics of the Pleura, the Lung, and the Pericardium by Means of Thorotrast (Sullo studio dei linfatici della pleura, del polmone e del pericardio per mezzo del thorotrast). *Radiol. med.* 1934, XVI, 19.

Capua reports observations made on the thoracic and abdominal lymphatics of dogs after the injection of thorotrast and in a clinical case in which an endo-

the thickness distribution and persistence of the deposit on the wall are (1) the consistency of the contrast medium (2) the consistency of the oesophageal wall including the degree of 'thickness' of the wall, the tonus and motility of the oesophagus and the form of the inner relief and (3) the posture of the patient.

The contrast medium recommended by the author is a paste-like watery emulsion of barium sulphate.

The stickiness of the mucosa is variable and of great importance for relief studies. It depends upon the moisture of the surface due to the secretion of the oesophageal glands, the swallowed saliva, and the effect of the tonus. It may be increased by the subcutaneous injection of 1 mgm of atropin. The more irregular the interior of the oesophagus the more easily is a relief picture obtained.

The posture of the patient is of secondary importance, but in the supine position the deposit of the contrast medium on the wall of the oesophagus is denser because its passage is slower. In examination of the uppermost parts of the oesophagus a more marked slowing of the passage of the contrast medium is obtained by elevating the pelvis.

To determine the gross condition of the lumen and the shape of the oesophagus the patient is given a swallow of the fluid contrast emulsion used for gastric examination in front of the fluoroscope. If stenosis is suspected the emulsion should be as thin as possible in order to prevent complete occlusion of the stenosis. This examination may be made with the patient standing but in the subsequent examination with paste the patient should be in the horizontal position. With the patient in the first oblique position a small swallow of paste is given before the fluoroscope and followed down to the stomach with a narrow diaphragm. Attention is directed chiefly to the tip of the contrast medium. With a constantly increasing slit shape of the diaphragmatic opening the part of the oesophagus traversed by the contrast medium is seen to become covered by a more or less thick deposit. As soon as the contrast medium has reached the stomach the patient is turned and the oesophagus observed through various diameters. With the patient in the second oblique position and sagittal diameters small amounts of paste are administered in order to view the oesophagus with complete filling. The standing position allows more rapid turning of the patient. With the patient in this position the deposits are studied more closely. The act of swallowing often removes disturbing air bubbles and gives information regarding the elasticity and shape of the oesophagus which may be of great importance in the diagnosis of infiltrations of the wall and adhesions. When no deposits are observed the administration of atropin will often render them visible. Pathological changes should be roentgenographed for closer study.

The pathological changes observed with this technique include inflammation, diverticula 'ruffling' varicosities, and neoplasms especially carcinomata.

LOUIS NEWBURY M.D.

Turner G G, Cleminson F J, Monkhouse, J P, Levitt W M and Others: Recent Advances in the Treatment of Carcinoma of the Oesophagus from the Surgical and Radiological Aspects. *Proc. Roy Soc Med Lond* 1934 xxvii 355

TURNER has been disappointed with the results of radium and X ray therapy in cancer of the oesophagus. He states that surgical treatment also is still unsatisfactory as many details of the technique are still undecided.

The disease is not always rapidly fatal, the patients sometimes surviving in comfort for six months or longer after treatment consisting only of gastrostomy. In 1 case death was precipitated nineteen months after gastrostomy by perforation by a bougie.

Even in the worst cases there is a stage at which the disease remains localized for a time and therefore may be amenable to radical treatment. While in one-third of the cases the condition is unusually malignant in two-thirds the difficulties of cure are due to the inaccessibility of the lesion.

In 5 cases in which Turner completed radical removal of the oesophagus there was no evidence of dissemination.

In a case in which Torek removed the growth the patient lived comfortably with an external oesophagus for nearly fourteen years. Turner believes that when the technical difficulties of operation have been overcome such results may not be infrequent.

Turner describes his pull-through method for removal of cancer of the thoracic oesophagus. He has performed it 3 times. The third case, in which it was followed by recovery is reported in detail.

The first stage of the operation is a preliminary exploration of the abdomen and gastrostomy.

The second stage which is performed two weeks after the first, consists of the following 4 procedures:

- 1 Through a high abdominal incision the left lobe of the liver is detached from the diaphragm to expose the abdominal portion of the oesophagus. A quantity of novocain solution is then injected around the lower oesophagus. This facilitates enucleation of the oesophagus by distending the cellular space and may displace the pleura. The peritoneum over the oesophagus is excised the forefinger introduced into the cellular area and the oesophagus enucleated as far upward as possible. The abdominal wound is then temporarily closed.

- 2 Through an incision above the left clavicle the cervical oesophagus is exposed and separated by the finger as far downward as possible. It is then ligated and divided as low as possible, at least 2 in. above the growth. The upper end of the divided oesophagus is fixed to the skin and the rest of the neck incision is closed.

- 3 From the abdomen gentle traction is made on the oesophagus and further separation is carried out with the finger. At this point the vagus nerves may be divided. After its liberation, the oesophagus is ligated and cut at the stomach end the stump turned in with pursestring sutures, and the thoracic portion removed from its bed in the mediastinum.

4 The liver is sutured into place over the open space from which the esophagus was removed, and the abdomen is closed.

In the case reported the esophagus was attached firmly near the root of the lung and was not completely loosened even by strong traction. When the esophagus was finally drawn through into the abdomen a tear in the right pleura was found and there was a rush of air into the cavity. The opening was temporarily plugged with gauze. Turner states that it was fortunate that he did not collapse the left lung before the operation, for with both lungs collapsed, one deliberately before the operation and the other accidentally, the patient might have died on the operating table.

The operation required one hour and forty minutes. The patient left the operating room in good condition.

The growth was a localized carcinoma of the constricting type which had not extended beyond the wall of the esophagus. Convalescence was complicated by nothing more than a troublesome cough and minor troubles which did not interfere with recovery. The patient was able to leave the hospital on the twenty-third day after the operation.

The third stage of the operation, the construction of a new esophagus, is the final problem. In the case reported the upper part of the new esophageal tube was made from skin over the front of the chest.

The first stage of the plastic operation was carried out about nine weeks after the removal of the esophagus when the patient was in good general condition. The skin tube just below the clavicle at the costal margin was made from the skin of the chest over a rubber tube the size of a No. 14 catheter. At the same time an unsuccessful attempt was made to form a satisfactory cone from the stomach to suture to the lower end of the skin tube later. Sixteen days after this operation an attempt was made to connect the cervical end of the esophagus in the neck with the upper end of the skin tube, but the wound broke down in a week.

Somewhat later, the abdomen was opened and a loop of jejunum 8 in. long was isolated and after the continuity of the bowel had been restored the isolated loop of jejunum was united to the posterior surface of the stomach by end-to-side suture and the other end of the loop temporarily closed, was brought through the lesser sac in front of the stomach and out through the upper end of the abdominal incision placed in a bed beneath the skin and left rectus sheath, and sutured to the skin tube, where it lay without the least tension. In the closure of the abdominal incision the loop of jejunum was anchored to the wound edges to prevent tension on the anastomosis.

Two weeks later the skin looked bluish and the suture line indolent. On removal of the stitches slight necrosis of the line of incision was found. The patient looked ill because of malnutrition. He was given more food and placed on a special diet designed to prevent scurvy. Improvement then began.

By the end of approximately a month after the last operation a fistula had formed at the junction of the intestine and the skin tube.

A month later a second attempt was made to unite the cervical esophagus with the upper portion of the skin tube. Following this, the patient progressed well. Four days later he surreptitiously sucked a dozen grapes and swallowed the juice, and a week after the operation he swallowed the last part of the gastrostomy feed with great ease. On the seventeenth day he swallowed a pint of liquid food. Three weeks after the operation he declared that he was well, and two days later he ate cake.

Six weeks after the last stage of the operation the gastrostomy tube was removed and the patient took all of his food—a poached egg, bread and butter, a pear, and half a pint of tea—by mouth. The fistula between the skin and jejunal portions of the tube was finally closed by a flap of skin.

Turner reported also the case of a man who lived eight weeks after removal of the thoracic esophagus with all of the stomach and spleen, but died of mediastinitis.

In the last case in which he operated the pleura was accidentally torn. During the first four days after the operation the patient made good progress, but on the ninth day he died from infection of the pleural cavity believed to be an extension from the gastrostomy tube to the esophageal hiatus.

Turner concludes that radical surgery holds some promise. He states that no attempt should be made to repair the esophagus *in situ*. To fill the defect a new esophagus should be made by the anterior route.

CLEMMENSON and MOWENHOUSE report a study of 89 cases of carcinoma of the esophagus treated by irradiation in the Throat Department of the Middlesex Hospital in the period from 1925 to 1932. Preliminary biopsy was done in 73 cases. In 70 of these the tumor was of the squamous-cell type, in 1 a spindle-cell carcinoma and in 1 a melanoma. Seventy-nine of the patients were males. The upper portion of the esophagus was involved in 6 cases, the middle portion in 55 and the lower portion in 28.

At the Middlesex Hospital, esophagoscopy is first done for diagnosis, a fragment of the growth being removed for section. Next the patient is subjected to X-ray examination to determine the length of the stricture. For this examination the Trendelenburg position is essential as without its use the lower end of the esophagus is undefined. From the information obtained, the dose of radon to be used and the length of the applicator are determined. At a second esophagoscopy examination, the radon is introduced. The radon is left in place for seven days.

In 1928 and 1929 the radon seeds were inserted into the periphery of the growth in 4 cases through an incision made in the thorax after preliminary collapse of 1 lung. Thereafter the method was abandoned.

Gastrostomy has been avoided because, except in rare cases in which it was done for a special reason,

It was found to be of no advantage. However during the last eighteen months, the advisability of gastrostomy as a preliminary measure has been considered, especially if it is deemed wise to remove the rest of the teeth.

The treatment should be begun as soon as the patient seeks advice. This date is the beginning of what has been called the "survival period." The average survival period in the whole series of cases reviewed was between five and six months. In the cases of the 10 women it was eight and a half months. In cases in which gastrostomy was performed the survival period was about twice as long as in the others. The only patient who was treated solely by X ray irradiation lived ten months. This suggests that deep X ray therapy may hold more promise than the application of radium. Of the 28 cases in which a postmortem report was obtained the cause of death was found to be perforation of the mediastinum in 9, perforation of the trachea and bronchi in 5, perforation of the aorta in 3, pneumonia in 6 and miscellaneous conditions in 5. Secondary deposits were found in the mediastinal, cervical and abdominal glands, and in the pericardium heart, lungs, liver, kidneys, and pancreas.

The results of the treatment were so disappointing as to suggest that it may even be harmful to introduce radon into the center of the growth, and that the patients might live longer if they were subjected only to the removal of all teeth and gastrostomy.

LEVITT says that in most cases the results obtained by X ray irradiation have been very poor but in rare instances improvement had been recorded. He cites 8 cases treated by this method. In 1 the treatment had to be abandoned because of bronchopneumonia from which the patient died. Seven patients were still alive at the time this report was made from three to eleven months after the beginning of the treatment. In 7 the obstruction was sufficiently relieved to permit the eating of ordinary food and in 6 no evidence of disease could be discovered by X ray examination. In only 1 case has sufficient time elapsed to permit esophagoscopy. In all, sufficient improvement has been noted to justify the belief that X ray treatment is worth while. Only large doses of very hard rays such as are produced by the best high voltage apparatus are of any benefit.

DUNNILL says that he has operated on 6 cases by an approach across the pleura and sometimes behind the pleura, but he has never seen a case in which he was able to free the growth from the structures to which it had become attached. In 1 case it was fixed to the vertebral column and in another to the bronchi. The transpleural approach had not disturbed the patients very greatly although it is a long tedious operation and wide opening of the chest is necessary.

GORDON TAYLOR reports that he has explored the thoracic esophagus many times in many ways and at many sites, but invariably with disaster. The only case in which he nearly succeeded was one in which he used the extrapleural method of Lillenthal.

HOWARTH states that he has excised the cervical esophagus and united the cut end from behind the sternum to the deep pharynx. The patient lived six years, but had a tight stricture which allowed the swallowing of only liquids.

In another case, operated on in 1930 after he had seen 100 cases of carcinoma of the esophagus and in which the growth was in the cervical portion, extended far down and could not be brought into the wound he had to be content with placing radon seeds around it. Examination a fortnight before this report was made revealed stenosis.

In cases of cancer of the thoracic esophagus he has done a transpleural thoracotomy and has come to realize what a short length of the esophagus can be mobilized. While he has observed dramatic temporary improvement after radon and radium irradiation in some cases, he believes that simple intubation and X ray irradiation are better.

JOBSOV urges a further trial of radon seeds inserted around the growth through the esophagoscope. In the case of a man with a fungating squamous-cell carcinoma who came to him for treatment in January 1931 he inserted 10 radon seeds (15 mc) around the growth. This patient is now gaining weight, is able to swallow ordinary food and feels well.

G. PAUL LAROCHE, M.D.

MISCELLANEOUS

Åkerlund, A.: The Anatomical Basis of the Roentgen Picture of the So-Called Acquired Hiatus Hernia (Die anatomische Grundlage des Roentgenbildes der sogenannten erworbenen Hiatusbrüche). *Acta radiol.* 1933 XIV 523.

The author states that both the name "hiatus hernia" suggested by him in previous articles and his classification of hiatus hernia have been adopted in roentgenological literature. He classifies these hernia as follows:

- Group 1: Congenital shortening of the esophagus.
- Group 2: True para-esophageal hernia.

Group 3: Involvement of abdominal portion of the esophagus in the formation of the hernia. Hernia of this type are now considered to be acquired.

For roentgen examination the hiatus hernia may be filled with the contrast medium from the stomach, a method which is satisfactory in cases of definitely developed hernia, or directly from the esophagus, a method by which the beginning stages of acquired hiatus hernia can be demonstrated.

In reviewing the normal anatomy of the region of the esophageal hiatus the author first describes the peritoneal relations. The hiatus area itself may be regarded as extraperitoneal. The author cites the anatomical studies of the hiatus musculature, the normal mobility of the esophagus and the normal position of the anatomical cardia which have been made in recent years by Koeppen and Frank, Anders, and Neumann. The findings of which disproved the theories of Sauerbruch, Chaoul and Adam.

The author describes the mechanism of origin and the development of the acquired hiatus hernia on the basis of the anatomical findings cited. Under the influence of a large number of factors, which are described in detail, first the antrum cardiacum and then the adjoining portions of the stomach protrude upward through the hiatus. In its very earliest stages this visceral displacement appears as a hernia without a hernial sac. Protrusion of the peritoneum does not occur until the hernia has attained a certain size. In the author's opinion the absence of a peritoneal covering in the first stages does not justify calling the visceral protrusion at the hiatus by any other term than hiatus hernia. Anders used the terms "hiatus insufficiency with epiphrenic bulging" and "thoracic dystopia of antrum cardiacum," and Neumann, the terms "bulb formation" and "bulbus antri cardiaci."

Röntgen examination as well as anatomical studies have shown that, in old persons, small sacless visceral protrusions through the oesophageal hiatus—the earliest stages of acquired hiatus hernia—are so common that they might be considered physiological changes of age. More pronounced acquired hiatus hernia with a hernial sac are evidently much less common, but have been shown by roentgenological and pathologic-anatomical examinations to occur considerably more frequently than has been believed.

In discussing the differential roentgenological diagnosis of hiatus hernia, the author contradicts the

assertions of Sauerbruch, Chaoul, and Adam, who deny that such hernia occur and claim that the published roentgenograms are misinterpreted.

Akerlund reports his biopsy and autopsy findings in eight cases of roentgenologically diagnosed hiatus hernia. In every case, a true hiatus hernia with a hernial sac was found. At least seven, and probably all, of the hernia belonged to Group 3, the reducible acquired type which Sauerbruch, Chaoul, and Adam claim does not occur.

Barrett, N. R., and Wheaton, C. E. W.: The Pathology, Diagnosis, and Treatment of Congenital Diaphragmatic Hernia in Infants. *Br J Surg* 1934, xxi, 430.

The authors state that a certain number of congenital diaphragmatic hernia occurring in infants can be cured by surgical intervention. The most favorable types are those through the pleuro-peritoneal canal on the left side, lateral defects in the septum, and small hernia in relation to the oesophagus.

Laparotomy rather than thoracotomy is the method of choice. The best anesthesia is induced with ether by the open method.

The hernia can be reduced easily from below but only with extreme difficulty from above. The operation done from below is not difficult. Adhesions are present very rarely. At the conclusion of the operation the pneumothorax should be terminated.

SAMUEL KARY, M.D.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Zahradníček, Rapant, Uram Bedrna and Others:
Discussion on the Treatment of Peritonitis
(Diskussion ueber Behandlung der Peritonitis)
Recht. Chir. u. Gynaek. C. Chir. 1933 xii 120

ZAHRADNÍČEK discusses cases of peritonitis which develop unexpectedly following operations on the gastro-intestinal tract and raises the question whether the defensive power of the body cannot be increased by vaccination. In the cases reviewed, typical long chains of streptococci were found. An other question raised is whether these infections might not have been associated with the then prevailing influenza epidemic.

RAPANT states that, according to Pribram, such infections may arise also from the lymph glands.

URAM reports a case of spontaneous rupture of the stomach and cites similar cases reported in the literature.

BEDRNA calls attention to the good results he has obtained from the administration of hypertonic salt solution in peritonitis associated with persistent vomiting.

PODLAHA reports a case of rupture of the stomach. JIRÁSEK reports two cases of rupture of the stomach in which this complication followed brain operations similar to those described by Cushing. He states that in his clinic the prophylactic administration of an autogenous vaccine has been done in cases of gastro-intestinal operations for a long time.

KOSTLIVÝ denies specificity of the sera. He believes that the sera exert a stimulative action.

HAVLÁSEK and MARJÁLEK discuss peritonitis following gynecological and obstetrical operations. Havlásek reports fifty-one cases, forty nine of which were fatal.

HAIN (Z)

Petřiválský J: The Influence of Biochemical Substances on Suppurative Peritonitis (Einfluss biochemischer Stoffe auf die eitrige Peritonitis)
Recht. Chir. u. Gynaek. C. Chir. 1933 vii 84.

Suppurative peritonitis should be recognized as early as possible and treated as conservatively as possible. The source must be removed, the pus evacuated from the abdomen. Intestinal activity restored, and the defensive forces of the organism increased. All depends upon the nature of the infection and the reacting capacity of the body which cannot be known in advance. If, for instance, intestinal sounds can no longer be heard on auscultation, operation should not be done. Recovery depends not only upon absolute rest within the abdomen (according to Ochsner who attains this by giving opium but not morphine) but also upon compli-

cated processes in which the nature of the infecting agent, its numbers and virulence, and the bactericidal and resorptive capacity of the peritoneum, the omentum and the organs containing the reticulo-endothelium namely the liver, spleen and bone marrow are decisive factors. The stomach also takes part in the defensive reaction by increasing its hydrochloric acid output. Because of the impairment of intestinal activity the fermentative process and the entire buffer system suffer. Glycogen formation in the liver is disturbed by the increased acidosis and the kidneys are affected. Therefore attention must be directed to the entire organism.

Persistent vomiting in peritonitis leads first to azotemia and then to acetoneuria. The latter is best combated by the administration of glucose and insulin. The hypertonic solution of glucose improves the function of the liver, the pancreas, and the heart, and prevents toxic shock from the peripheral vascular paralysis. The insulin increases the excretion of gastric juice and gastric activity. If cardiac activity is impaired, calcium should be given intramuscularly and intravenously. When anatomical changes have occurred in the myocardium, cardiac stimulants must be given. Digitalis is indicated only in cases of decompensated valve failure. One-third milligram of strophanthin in combination with caffeine is better. Also of value are scillaren, camphor, coramin, cardiac lobelin, and caffeine with strychnin, all of which act upon the peripheral vessels. The circulation is further stimulated by adrenalin, sympatol, ephetonin, and ephedrin. In hypertension, venesection is indicated, and in hypotension, digipurat with caffeine should be given. The cardiac tonics may effectively be combined with glucose. When the circulation of the blood is disturbed the intravenous infusion of glucose and sodium chloride solution is beneficial. Hypertonic sodium chloride solution has a favorable effect also on intestinal activity. There is no danger of overdosage of sodium chloride as the kidneys readily excrete the excess. For the fall in blood pressure, the various hypophyseal preparations—testophylin, hypophen, tonephin, and reviten—are of value. Also recommended is prostigmin which in contrast to pituitrin, provokes co-ordinated intestinal movements, relieves urinary retention and is not injurious to the heart.

Petřiválský irrigates the peritoneal cavity only in generalized peritonitis. In cases of suppuration localized to the lesser pelvis and those of recent, localized suppuration in the abdomen he wipes out the exudate with moist sponges. In staphylococcal suppurations, the introduction of a small quantity of ether into the abdomen has proved of value. In suppurations due to streptococci, rivanol is better. In order to prevent blocking of the reticulo-endothelial

system care must be taken not to use it in too large quantities. In contaminations of the upper abdomen during operations on the stomach Pregl's solution is employed. Recently blood transfusions, auto-hemotherapy and the use of amniotic fluid have been recommended. The effect of the various sera which have been recently recommended is unquestionably favorable in peritonitis. The author is experimenting with bacteriolysate.

In conclusion Petřivský says that while it is difficult to estimate the results of the treatment of peritonitis in percentages, he believes he has improved his results by from 10 to 15 per cent. HARK (Z)

Vohnout C. Experiments in the Treatment of Peritonitis with Bacteriolysate (Versuche mit Bacteriolysatbehandlung bei Peritonitis) *Reich. Chir. u. Gynaek. C. chir.* 933, VII, 2.

The author reports his experiments with a preparation called bacteriolysate a clear somewhat brownish, opalescent liquid. In several experiments it was found to be sterile but showed no bactericidal properties. In animals it could be introduced intraperitoneally without injury. It was employed also in several clinical cases of peritonitis.

The administration of the bacteriolysate was always followed by a transitory elevation of the temperature with subsequent improvement in the general condition. The substance has no bactericidal effect, but it increases phagocytosis and provokes a leucocytosis. It may possibly also stimulate the sympathetic system. The author believes that the same results may be obtained with bacteriolysate as with the French and German sera. HARK (Z)

Podlaha J. Surgical Treatment of Traumatic Peritonitis (Chirurgische Behandlung der traumatischen Peritonitis) *Reich. Chir. u. Gynaek. C. chir.* 933, VII, 98.

The author reviews 221 cases of abdominal injury due to blunt, sharp stab and gunshot wounds and the swallowing of foreign bodies which were seen in a period of ten years and in which there were 21 deaths. He then reports in detail a case of retroperitoneal rupture of the duodenum in a man seventy-seven years of age who had a large scrotal hernia. The rupture occurred during an attempt at reduction of the incarcerated hernia. The site of rupture was sutured, but death ensued. The author summarizes his conclusions as follows:

The symptom-free stage which follows an acute trauma to the upper abdomen and, after the subsidence of shock, is followed by a painful swelling in the upper abdomen and a roentgenologically demonstrable emphysema behind the duodenum is pathognomonic of retroperitoneal rupture of the duodenum. Treatment should never be delayed until the condition becomes worse or symptoms of general peritonitis appear. Exploratory laparotomy is justified, and if its findings are positive, offers the only possibility of saving the patient's life. Whenever hemorrhage is found in the region of the descending limb of

the duodenum, at the attachment of the transverse mesocolon, and at the margin of the mesentery of the small bowel the possibility of retroperitoneal rupture of the duodenum should be considered. The posterior duodenal wall may be exposed by mobilization from above by the Kocher method or from below by the Clairmont method. If access is then inadequate an upper or lower décollement of the adjacent portion of the colon and mesocolon may be done. In small transverse ruptures of the duodenum a transverse suture of the posterior wall is sufficient. This may be reinforced by an omental plastic. In longitudinal and longer tears the suturing must be done longitudinally and if narrowing of the lumen occurs a gastro-enterostomy must be added. Tamponade is not advisable, and because of the possibility of a secondary perforation, closure of both duodenal stumps with gastro-enterostomy is contraindicated. The region of the suture should be drained from behind by a lumbotomy on the right side.

HARK (Z)

Collins, A. N. and Berdez, G. L. Chyle Cysts of the Mesentery *Arch. Surg.* 934, XXIV, 335.

While mesenteric cysts were described as long ago as 1670 chyle cysts of the mesentery were first described in 1832 by Rokitsansky. Chyle cysts of the mesentery are relatively rare, but may occur at any age. The authors report two cases.

In fourteen of sixteen cases reported in the literature the patients were more or less ill for periods ranging from two months to twelve years. The symptoms included malaise, loss of strength and weight, easy fatigability, nausea, occasional vomiting, and abdominal discomfort varying from a dull ache to pain. In half of the cases a palpable tumor was found. Abdominal tenderness was present in 12 cases. In the majority, this was generalized, but in some cases it was localized at the umbilicus to the right side, or in the lower part of the abdomen. Rigidity occurred in the acute cases.

A correct diagnosis is not made before operation or autopsy. There are no symptoms pathognomonic of the disease. The acute cases usually suggest intestinal obstruction or peritonitis. In chronic cases the abdominal tumor if single, is smooth and rounded, and fluctuation can be made out. The tumor does not move with respiration. The presence of a freely movable tumor in the lower part of the abdomen which fluctuates and has a midline attachment should suggest mesenteric cyst. The differential diagnosis is aided by the discovery of chylous ascites on exploratory puncture.

Surgical treatment offers the only hope of cure. The mortality of all methods of treatment has been 25 per cent. The methods include (1) aspiration, (2) incision and drainage, (3) enucleation, and (4) marsupialization. The authors regard marsupialization as the best procedure. They are of the opinion that intestinal resection and extirpation will always have a higher mortality.

HOWARD A. MCKENRY, M.D.

Nylander P E A Inflammatory Cell Reactions in the Omentum (Ueber entzündliche Zellreaktion im Netz) *Arch path. Anat. Histol.* 1933 vii 453

The author carefully examined specimens of omentum for inflammatory cells in a large number of cases of appendicitis and peritonitis due to that condition. They found that the inflammatory manifestations were particularly active near the site of inflammation but that, at times, inflammatory cells were mobilized at quite a distance. Neutrophilic granulocytes predominated among the inflammatory cells in the tissues.

The defensive reactions of the human omentum are related closely to the activity of the neutrophilic granulocytes and the macrophages. Other cell forms, including mesothelial cells and lymphocytes, are of much less importance. The reactions occur particularly in infectious toxic irritation of the peritoneum. In purely mechanical irritations such as those produced by foreign bodies an intensive proliferation takes place.

The author's studies confirm the theory that some of the macrophages are formed from the fat cells of the omentum. It was surprising that in some of the fatal cases of appendicitis reviewed only a very slight inflammatory cellular reaction was found.

The method of examination and the findings are described in detail and shown in numerous illustrations.

JUNGHAUS (Z)

GASTRO-INTESTINAL TRACT

Manges, W F: The Roentgenology of Foreign Bodies in the Esophagus and Gastro-Intestinal Tract. *Surg Clin North Am.*, 1934, xiv 89.

In the esophagus, both non-opaque and opaque foreign bodies present roentgenological evidence of their presence. The non-opaque variety that lodges because it is relatively large and irregular in shape is best shown in roentgenograms made after the patient has been given a small quantity of barium or bismuth mixture to swallow. Some of the opaque medium adheres to the foreign body and often gives very definite information as to its size and shape as well as its location.

The non-opaque foreign body which completely obstructs the esophagus presents very characteristic evidence when the opaque mixture spreads out over its upper surface and produces a concave shadow in the fluoroscopic picture or roentgenogram.

In cases in which there has been a previous lesion of the esophagus complete obstruction may be produced by relatively small objects. Small pointed non-opaque foreign bodies such as fish bones, splinters of wood, and small fragments of bone become lodged because their sharp point becomes embedded in the esophageal mucous membrane. In the great majority of cases the upper end of foreign bodies of this type remains free in the lumen of the esophagus. The foreign body will not retain a liquid mixture of barium or bismuth but in an extremely large percentage of cases will cause a No. 00 capsule filled

with the opaque mixture to lodge at its level either because its free end forms a shelf on which the capsule rests or because the local irritation causes the esophagus to contract and hold the capsule.

The diagnosis of opaque foreign body must include a description of its shape, size, and site as these are of extreme importance to the esophagoscopist. In cases of non-opaque foreign body in the stomach or intestine the roentgenologist is rarely able to give diagnostic information. In the removal of foreign bodies from the esophagus, stomach and intestines he gives important aid by the use of a double-plane fluoroscopic apparatus in which the relation between the instrument of the operator and the foreign body can be determined by means of the fluoroscope and seen in two views at right angles to each other.

In double-plane fluoroscopic removal of foreign bodies the roentgenologist must assume responsibility for the amount of roentgen-ray exposure of the patient and his assistants. The production of a dermatitis by over-exposure must be avoided and special care must be taken to prevent the heads and hands of the assistants from coming into the path of direct irradiation between the patient and the X-ray tube.

CHARLES F. DuBOIS, M.D.

Poulsen, V., Andersen, A. O. and Lester, V.: Four Years Experience with Examination of Material Obtained by Gastric Lavage. I. Demonstration of Tubercle Bacilli and Its Significance in Prognosis, Therapy and Estimation of Danger of Infection. II. Demonstration of Tubercle Bacilli. *Am. J. Dis Child*, 1934, xlvii, 307-312.

This report comes from Denmark. In 1928 the authors began an intensive search for the presence of tubercle bacilli in material obtained by gastric lavage in the cases of children with a positive tuberculin reaction. Similar examinations have been carried out in several hospitals in Copenhagen. The chief physicians in the departments have furnished material for collective investigations. Most of the bacteriological examinations were carried out in the Tuberculosis Department of the State Serum Institute. The gastric material was collected on successive days from many patients and the samples were pooled for examination. The actual finding of tubercle bacilli was supplemented by cultivation on substrates and the inoculation of guinea pigs.

Of the 622 children examined tubercle bacilli were found in the gastric lavage material of 109. The great majority of the children with positive findings were three or four years old. After the fourth year of age there was a marked fall in the total number of positive findings. Of 62 children in the first year of life tubercle bacilli were demonstrated in the gastric lavage material of 54. The greater prevalence of tubercle bacilli in infants under one year of age is explained by the pathogenesis of tuberculosis in infancy and the tendency of the condition to progress in the first year of life. Infection takes

place by way of the respiratory passages. Milk and food as a source of infection may be disregarded in Denmark. In the infant, tuberculous bronchitis or bronchopneumonia develops and the regional lymph glands become involved from this focus or the primary lung lesion extends directly to the adjoining lung or heals by encapsulation and calcification.

In the second, third and fourth years of life tubercle bacilli are found in the stomach much less frequently chiefly because the primary lesion is more completely healed. Tubercle bacilli were demonstrated in the material obtained by the first lavage in 152 (77 per cent) of the children whose cases are reviewed. A second lavage increased the percentage to 91 and a third increased it to 96. Additional lavages yielded insignificant increases.

From these findings it becomes apparent that this method of examination is suitable for the demonstration of tubercle bacilli in children at an age when it is difficult or impossible to obtain sputum for examination. While it is conceivable that the tubercle bacilli demonstrated in specimens obtained by gastric lavage and demonstrated by inoculation of animals and various cultivation methods may be chance inhabitants in the fauces and stomach in children who do not have tuberculosis, examination of the sediment obtained by lavage from 152 children with negative tuberculin reactions failed to show tubercle bacilli.

When the findings are positive the child is almost certainly suffering from tuberculosis, and when it can be established that the bacilli do not originate in the fauces, tonsils, or adenoids, the infection must be in the lungs. While tuberculosis of the lungs is often revealed by X-ray examination and auscultation of the chest, the lavage method yields a higher percentage of positive findings.

Of the 190 children in whom the presence of tubercle bacilli was demonstrated by the lavage method 43 have died, 148 are living, and 7 cannot be traced. The conclusion to be drawn is that most of the children who do not succumb rapidly to the tuberculous infection are well after an average of two years. In this respect there is no difference between children who do, and children who do not, show the presence of tubercle bacilli. With regard to the danger of infection in children with positive gastric findings, the authors state that the younger the child the greater the probability that the tuberculosis remains unhealed and that the child is constantly discharging tubercle bacilli. In the child, tuberculosis of the bronchial and hilar glands is probably always associated with a tuberculous process in the lungs. The lungs are the first site of attack. The regional lymph glands become infected from this primary focus so that at some time both the lungs and the glands are involved by the disease. The pulmonary tuberculosis may heal up before the *glandular tuberculosis*. As long as the pulmonary tuberculosis remains unhealed, it is possible at some time to demonstrate the presence of tubercle bacilli in the material obtained by gastric lavage. This is

true especially when the child has a positive tuberculin reaction. Roentgenograms revealing only enlargement of the hilar shadow and no infiltrative process in the lungs do not definitely rule out involvement of the lungs. In many cases in which such roentgenograms are obtained there is an open active pulmonary tuberculosis.

Lester describes the technique used in the diagnosis of tuberculosis of the lungs in the cases of children with positive reactions to tuberculin and positive gastric lavage findings. In the bacteriological studies Petroff's and Lowenstein's media were used. Formerly cultivation failed in from 25 to 30 per cent of the cases in which the results of the inoculation of guinea pigs were positive. By the methods now employed, positive cultures are obtained in 100 per cent and inoculation of guinea pigs has been rendered unnecessary except in the cases of children under five years of age. The method used is as follows:

From 100 to 300 c.cm. of material obtained by gastric lavage is allowed to stand for from eighteen to twenty four hours. The material is then centrifuged and stained smears are examined microscopically. The remainder is divided into 2 portions, one of which is homogenized with 4 per cent sodium hydroxide and the other with 6 per cent sulphuric acid by volume. After centrifugation at high speed for twenty minutes, the supernatant fluid is removed, the sediment is neutralized with 3 drops of 8 per cent hydrochloric acid, half of it is planted on 3 Lowenstein tubes, and the remainder is inoculated into guinea pigs, in some subcutaneously and in others intraperitoneally. For the acid homogenization, about 5 c.cm. of 6 per cent sulphuric acid are added and after vigorous shaking the mixture is allowed to stand in the dark for five minutes at room temperature. Next, from 10 to 15 c.cm. of saline solution are added and the mixture is briefly centrifuged. The sediment is then seeded in 3 tubes with a platinum loop. The tubes are sealed with paraffin, incubated at 36 degrees C. and examined once a week. With a positive culture, usually obtained in from eighteen to twenty five days, a smear for microscopic examination is made. Absence of growth after six weeks is regarded as negative for tuberculosis. However in occasional instances observation at the end of an additional four weeks has revealed a few colonies.

After the guinea pig inoculations rather weak reactions are sometimes found. In some cases tuberculosis may develop only after subcutaneous inoculation and in others only after intraperitoneal injections. The tests on guinea pigs are concluded after six weeks. At necropsy it is not always possible to find a typical disseminated tuberculosis.

A total of 380 positive samples obtained from 160 patients were tested bacteriologically to determine both the virulence and the number of the tubercle bacilli present. Nothing was found to indicate that the bacteria were less virulent than tubercle bacilli isolated from other parts of the body. The material

obtained from gastric lavage gave a growth of more than 20 colonies in 47 per cent of the adults and older children but in only 22 per cent of the patients under ten years of age. Forty four per cent of the positive specimens from children showed only from 1 to 3 colonies. On Lowenstein's medium the incidence of growth is so high that inoculation of guinea pigs is unnecessary except in the cases of children under five years of age.

JOHN W. NUXOM, M.D.

Roblhm, K.: The Value of Circular Resection in Chronic Gastric or Duodenal Ulcer (Ueber den Wert der zirkulären Resektion bei Ulcus chronicum ventriculi u. duodeni) *Acta chirurg Scand* 1934, lxxiii, 433

In this monograph of approximately 50 pages the author discusses practically every important aspect of the surgical treatment of gastric and duodenal ulcer. He first outlines the objectives of surgical treatment of these conditions—the correction of the pathological process or its associated complications. The surgeon corrects mechanical malfunction such as that due to stenosis removes either the ulcer and a greater or smaller part of the adjacent tissue changes gastric function by decreasing the emptying time of the stomach and neutralizing the gastric contents or decreasing gastric secretion so that the gastric load is diminished, or changes the site of gastric emptying so that mechanical irritation of the ulcer is reduced.

The author next discusses the principles of the different surgical techniques reviews the physiology of the stomach and duodenum and traces the historical development of ulcer surgery.

The type of lesion, the duration of the symptoms before surgery the indications for operation, the type of surgery used, the age of the patient, and the operative mortality in the cases reviewed are tabulated. The results are divided into 4 groups (1) complete cure, (2) almost complete cure (3) improvement, and (4) poor results.

In the 130 cases reviewed the operations included 40 circular or sleeve resections of the gastric corpus and 90 pylorotomies, i.e., removal of the pylorus and a portion of the antrum and the first part of the duodenum. In addition there were 8 cases of radical surgery secondary to a gastroduodenal operation.

In the 122 primary operations the immediate surgical mortality was 10.7 per cent (13 deaths) and in the 8 cases of secondary resection it was 37.5 per cent (3 deaths). The cause of death was bronchopneumonia in 5 cases, a demonstrable error in surgical technique in 3 cases, an unknown cause or a combination of factors in 3 cases, a questionable error of surgical technique in 2 cases, peritonitis in 2 cases, and pulmonary embolus in 1 case.

In 105 cases the patient was subsequently re-examined and the result of the operation evaluated. Sleeve resection of the gastric corpus was abandoned because of frequent ulcer formation at the site of the operative scar. Primary resection of the pylorus was followed by improvement in 81.5 per cent of the cases and by unsatisfactory results in 18.5 per cent.

The mortality of this operation was 12.2 per cent. From a comparison of these results with those obtained in the 101 cases in which gastro-enterostomy was done in the same clinic in the period from 1906 to 1916 the author concludes that there was no definite difference in the results of these 2 types of surgery when they were employed routinely.

SAMUEL J. FOGELSON, M.D.

Kirklin, B. R.: The Value of the Meniscus Sign in the Roentgenological Diagnosis of Ulcerating Gastric Carcinoma. *Radiology* 1934, xxii, 131

In 1921 Carman described a new roentgenological sign of ulcerating carcinoma of the stomach, a concavoconvex shadow representing the ulcer crater, which he termed the meniscus sign. Carman had in mind carcinomata in which the element of tumefaction is much less obvious than that of ulceration and the character of which is less readily recognized.

When the lesion is on or near the lesser curvature in the vertical portion of the stomach the crater is seen under palpatory pressure on roentgenoscopic examination as a crescentic shadow with its convexity directed outward and is aptly described as a meniscus. When the lesion is on the lesser curvature distal to the angular incisure the base of the crater bends with the wall and the meniscus is concave above. When the ulcer is on the posterior wall the crater appears, under manual pressure over the stomach as a dense, irregularly rounded shadow encircled by a transradial zone which corresponds to the elevated border.

At the Mayo Clinic the diagnostic value of the meniscus with its attendant phenomena has been abundantly proved. In every surgical case in which these manifestations were elicited an ulcerating carcinoma was found at operation. Although the meniscus form of the crater seen in typical cases is important the slightly raised overhanging border is apparently even more significant. A characteristic of the meniscus crater is its slowness in emptying under pressure.

To demonstrate the lesions and determine their character roentgenoscopic examination under manipulation is indispensable. After the stomach is filled with the mixture of barium the lesions are likely to be concealed so completely that they are not visible in the roentgenogram and sometimes are not readily shown even by compressing the stomach. Accordingly inspection should begin when the first swallow of barium enters the stomach and the mixture should be distributed over the gastric walls by palpatory pressure to visualize the entire mucosal relief.

In each of the four cases reported by the author the meniscus was so small that it would not have been demonstrable without close adherence to a routine roentgenoscopic technique. Even when the lesions are considerably larger careful and methodical examination is necessary to disclose them. It is especially necessary to begin roentgenoscopic inspection when the first swallow of barium is taken,

to distribute the barium over the wall of the stomach by manipulation, and, by downward stroking with the fingers, to study the internal gastric relief while it is being revealed. Roentgenograms for permanent record are often desirable but roentgenoscopic study of the internal topography of the stomach is the most reliable method of discovering narrowly limited organic changes.

Mistrouci, E.: Enterolithiasis and Pseudo-Enterolithiasis (Enterolithiasis pseudo-enterolithiasis). *Radial med.* 934 1 50

The author reports the case of a baby nineteen months of age whose condition was believed to be abdominal sarcomatosis until roentgen examination showed the supposed tumors to be enteroliths. He then discusses the etiology of enterolithiasis on the basis of the findings of Trumpp, Rottmann, Berti and Kramer which showed that mucoid concretions are formed in the intestines as the result of a prenatal enteritis. He emphasizes the great importance of roentgen study of the condition.

EDMUND T. LADD, M.D.

Kraus, E., and Beck, W. C.: Chronic Duodenal Ileus. *Ann Surg.* 1934, 101, 3.

The history of chronic duodenal ileus from the first report in 1753 down to 1903 when Lauffer reviewed the literature, is briefly reviewed. The authors believe that the duodenum may assume a dilated state as the result of various factors acting either separately or in combination. American and English surgeons are inclined to ascribe dilatation of the duodenum to demonstrable mechanical causes, but many European surgeons have reported cases of a condition they call true megaduodenum in which no such causes could be found. For an understanding of true megaduodenum it is necessary to know the embryological development of the duodenum. The authors review the embryological development in detail.

The various types of duodenal ileus are classified by the authors as follows:

1. Adynamic duodenal ileus. Of this type are cases in which no mechanical obstruction can be found, viz. the true megaduodenum of Duval, Melchior, Schmieden, and Kraus. The etiology still remains to be cleared up definitely. The condition has been attributed to developmental and neuromuscular factors and by some has been classed with *Hirschsprung's disease*.

2. The dynamic chronic duodenal ileus. Of this type are cases in which a mechanical hindrance in the duodenum is discernible. On the basis of the nature of the obstruction the following two subgroups are to be distinguished:

a. Intrinsic duodenal lesions. Of this type are diseases affecting the duodenum itself, such as neoplasms, duodenitis, congenital atresia, inflammatory disease, a duodenojejunal link, and diverticula.

b. Extrinsic lesions. To these belong the chronic arterioenteric occlusion, peritoneal strands and

adhesions, and diseases of the surrounding organs which produce stenosis by pressure.

c. Complications of duodenum mobile such as hernia and intussusception.

The site at which the stricture is produced in the cases of Group 2 is of greater importance from the standpoint of diagnosis and therapy than in obstruction of the small intestine. In most cases, however, this is determined by the anatomical relations of the etiological factor.

Chronic duodenal ileus has received more attention in the American and English literature than in the European literature. In clinics other than those reporting large series of cases the diagnosis is made extremely rarely, probably because the condition is often not looked for. The clinical history and physical examination, although suggestive when the possibility of the condition is borne in mind, are far from being clear. The roentgenologist is often interested only in the duodenal bulb and overlooks pathological processes in the remainder of the duodenum.

Shattuck and Imboden found chronic duodenal dilatation to occur four times more frequently in females than in males. This may be explained by the relaxation of the abdominal muscles following pregnancy. It may be due in part also to the greater frequency of gall-bladder disease in the female although Bryant found adhesions more common in the male. The subjects are usually of middle age and of the asthenic type.

The symptoms of the disease entity are not accurate or definite, and the diagnosis is often difficult even after careful roentgenological examination. Kellogg suggests that in many cases symptoms appear only when the colon is dragged downward by its contents, being therefore characterized by a certain periodicity. Taylor observed that symptoms result when the obstruction is greater than can be overcome by peristaltic efficiency. By many, two types of subjective symptoms are differentiated, the mechanical and the toxic. The toxic symptoms consist of mental lassitude, fatigue, and headache. The latter is usually of the unilateral migraine type. The mechanical symptoms classified by Wharton as static and kinetic and the symptoms emphasized by others are discussed by the authors in detail. The chief characteristics of the symptoms are periodicity of the attacks, the fact that any food may bring them on, the occurrence of headache and lassitude and the fact that relief is obtained by the assumption of a bizarre position rather than by medication.

The physical findings are minimal. The patient is often of the asthenic type with a lax abdominal wall and a ptotic habitus. The upper abdomen may be distended and the umbilicus may appear to be higher than normal. According to Hayes, percussion will give a tympanic sound behind the right rectus muscle and just to the right of the pylorus. The plectrometer finger must be placed with sufficient pressure to diminish gastric and colonic tympany so that the examining finger is brought closer to the duodenum. Pressure upward and backward beneath

the transverse colon permits the duodenum to empty. Gas can then be heard, felt or heard rushing into the jejunum. Thereafter the sound will be relatively dull. Case has described succussion over the duodenum. Zade used a stomach tube and compared the amount of water introduced into the stomach with the amount he was able to recover.

Conservative treatment is directed against the ptosis and has an effect only in a palliative sense. Holmes recommends long bed rest and over alimentation for cases of the viscerotropic type. Others have recommended rest in a moderate Trendelenburg position and the wearing of abdominal binders and supports. Massage of the abdominal wall and postural exercises may prove beneficial. Very frequent small feedings of food with a high calory content and the administration of mild laxatives to prevent constipation are of value.

Operative interference should not be attempted before the patient's general health has been carefully determined. Wolfer states that in some cases the patient may remain in good condition in spite of high-grade obstruction. However a sudden anatomical accident may cause an acute exacerbation characterized by severe toxemia. In the cases of patients who are extremely ill and can tolerate little surgical trauma repeated duodenal lavage with the Levine or Rehfuess tube is of distinct value. To combat the toxemia the method of Dragstedt—the intravenous infusion of 500 c.c.m. of Ringer's solution every four hours for twenty four hours—may be employed. To overcome deficiency in the blood chlorides, Haden and Orr recommend the infusion of sodium chloride solution.

The choice of the operation is in many cases difficult and should be governed by the cause of the condition. Because of the great variety of etiological factors, numerous procedures have been recommended. The intrinsic lesions are usually treated by a nutrient jejunostomy or one of the short-circuiting operations. The various operations are described.

After operation the foot of the bed should be elevated. In the immediate postoperative treatment the usual routine should be that followed after gastric surgery. Later, the patient should wear a supporting belt and should be given exercises to strengthen the abdominal musculature.

EMIL C. ROBINSON, M.D.

Birt, E.: The Pathogenesis of Recurrence of Attacks of Appendicitis (Ueber die Pathogenese des Rezidivierens des appendicidischen Anfalls). *Arch f Klin Chir.*, 1933, cxvii, 686.

The appendix is predominantly a lymphatic organ with a function entirely different from that of the adjacent bowel. Disease of the appendix is not the result of simple invasion by intestinal bacteria as the bacterial flora of the appendix is generally totally different from that of the rest of the intestine. Even the mildest inflammation of the appendix leaves traces in the organ consisting of organized fibrin which later becomes fibrous strands. The strands in

crease the susceptibility of the appendix to injury by mechanically interfering with the evacuation of its lumen. The nature of the injuries produced by the adhesions is very variable but may often be demonstrated by agreement of the X-ray and operative findings. The author presents a series of sketches and typical roentgenograms showing the various mechanisms of segmentation torsion, and strangulation. The effect of the strand formations on the appendix confirms the conclusion based on experience that each successive attack of appendicitis is more dangerous than its predecessor and demonstrates that after one or two attacks of even the mildest degree removal of the appendix should be recommended.

FREDERICK BOVE (7)

Devina, H. B.: Rectosigmoid and Sigmoid Surgery. *Australian & New Zealand J Surg*, 1934, lli, 212.

From an operative standpoint the colon cannot be considered as a whole. Operations on the proximal part of the colon are more on a level with those on the small intestine. The conditions which are present in the distal part of the colon are unfavorable for the methods of anastomosis which are successful in the small intestine and the proximal part of the colon. The high mortality of anastomotic operations on the sigmoid colon with suture is due to local or generalized peritonitis caused by infection from soiling at the time of the operation or from the anastomosis subsequent to the operation.

It is to avoid the dangers of an anastomotic operation that Devine advocates the routine use, when ever possible of a modification of Paul's method of partial colectomy. In cases in which resection and anastomosis of the rectosigmoid are necessary Devine first establishes a mid-colic anus in the transverse colon. This procedure renders the distal colon functionless and allows the use of irrigations to cleanse the distal colon and make it aseptic so that resection and anastomosis can be accomplished much more safely. After the anastomosis has securely healed, the mid-colic anus can be easily closed by the application of an enterotome clamp.

Devine reports three illustrative cases in which he successfully applied the principles he advocates.

EARL GARRETT, M.D.

LIVER, GALL BLADDER, PANCREAS AND SPLEEN

Millbourn, E.: On the Diastase Conditions in Cases of Jaundice Due to Malignant Tumors. *Adachiurg Scand*, 1934, lxxiv, 47.

In twelve (27 per cent) of forty four cases of jaundice due to malignant tumor which were seen at the Lund Hospital the diastase content of the urine was increased to 512 mgm per 100 c.c.m. or above. In five cases it was found increased by several tests and in seven cases by one test. The only cause to which the increase could be attributed was an action exerted upon the pancreas in some unknown manner by the tumor process. In eleven cases the increase

3. The therapeutic result is absolutely nil.
The treatment indicated is the administration of neosalvarsan and bismuth.

ISAAC ANDERSON, M.D.

Jameson, E. M.: Tuberculosis of the Uterus and Fallopian Tubes, with a Report of Two Cases Treated with X Rays. *Am. J. Obs. & Gynec.* 1934 xvii, 173.

The author attempts to evaluate the results of current methods of treating tuberculosis of the internal genital organs. He states that they are not satisfactory and that genital tuberculosis must be regarded as a very serious condition. Unlike the common gonorrheal and puerperal inflammations of the tubes and uterus, in which the treatment is concluded when the diseased tissues have been removed, tuberculosis of these parts is only a local manifestation of a general condition and its treatment must be continued until the infection has been brought under control by the use of the measures which have been found efficacious in tuberculosis elsewhere in the body.

There is urgent need for greater care in the diagnosis of the cause of inflammatory pelvic conditions. Microscopic examination of a routine hit or miss section through an inflamed tube is not sufficient. Guinea pig inoculation is of value.

The author reports two cases of tuberculosis of the uterus and fallopian tubes in which the roentgen rays were used in the treatment.

EDWARD L. CORNELL, M.D.

Cotte G. and Bérard, M.: The Present Status of Myomectomy in the Treatment of Uterine Myoma. (Sur la place actuelle de la myomectomie dans le traitement des myomes utérins). *Gynec. et obs.* 1934, xvii.

In spite of the recommendations of such men as Martin Tuffier, Goulloud, Giles, and Mayo myomectomy has not yet been given the place it deserves in the treatment of uterine myoma. In 1924, Labey and Triver estimated from statistics on over 10,000 cases that this intervention is used in only about 4 per cent. During the past ten years the choice of treatment has been chiefly between physiotherapy and total or subtotal hysterectomy. The immediate results of hysterectomy are very satisfactory and the mortality insignificant. In the cases of young women all of the undesirable effects of castration must be reckoned with, and even in those of women past the menopause serious mental and psychic complications may develop, not to mention chronic rheumatism, osteo-articular pain, cellulitis, sensory visual disturbances, deafness, basodism, obesity, hypertension, affections of the external genitals such as leucorrea vulvæ with vaginitis, and loss of libido. It has been shown experimentally that hysterectomy causes changes in the pituitary and probably also in the adrenals and thyroid, to which many of the symptoms are probably attributable.

In certain cases hysterectomy doubtless remains the only intervention possible, but it should not be represented to patients as being the only operation promising cure in all cases nor even as the operation offering the least risk. As a matter of fact the operative mortality of myomectomy is no greater than that of hysterectomy.

Therefore between the medical treatment sufficing in certain cases in which the menopause aids involution and radical measures of X-ray castration or hysterectomy, myomectomy finds a place, the more justifiable in that while, suppressing the lesion, it conserves the anatomical and functional integrity of the genital apparatus.

Cotte and Bérard have made increasing use of this operation. Whereas early in their career they performed it in only 4 per cent of their cases, they now perform it in 47 per cent. Today myomata are diagnosed earlier and are therefore seen at a stage more favorable for less radical intervention.

The presence of multiple nodules in the uterus of a young woman does not necessarily indicate hysterectomy. In a woman between forty and fifty years it would be an error of judgment to insist on myomectomy. The surgeon must always take into consideration the nature of the discharge and the condition of the cervix. In all cases with intermenstrual oozing of a more or less hemorrhagic type suggesting the possibility of an associated cancer of the uterus, hysterectomy should be done. The difficulty in diagnosing the precancerous conditions of the uterine mucosa so common shortly before the menopause necessitates great caution in choosing myomectomy at this age.

In all cases in which the cervix shows signs of lacerations or scars from pregnancies or operations or patches of leucoplakia total hysterectomy is indicated. Age in itself should not be the determining factor for or against myomectomy. Even in the cases of older women with hypertension, provided there are no other contra-indications, myomectomy gives splendid results.

It is, of course, especially the cases of young women in which myomectomy finds its chief indication. Of 13 cases of myoma in women under thirty-five years of age myomectomy was done in 11. In 19 cases of fibroma in women ranging from thirty-five to thirty-nine years of age 15 myomectomies were performed. In the cases of women between forty and forty-four years of age myomectomy was done 11 times, but the number of hysterectomies increased to 18. In 23 cases of women from forty-five to forty-nine years of age, there were 7 myomectomies and 21 hysterectomies. Finally in the cases of 12 women over fifty years of age, 3 myomectomies and 9 hysterectomies were done. In a total of 102 cases of uterine myoma the authors performed 47 myomectomies and 54 hysterectomies. Radium treatment was used in only 1 case.

Other factors that may determine whether myomectomy or hysterectomy should be performed are anatomical conditions, the site and the nature of the

myoma i.e., whether it is benign or has undergone malignant degeneration and the presence or absence of adnexal lesions. With regard to the anatomical conditions it is necessary to consider feasibility of enucleation the number of nodules, and the presence of adnexal complications and of secondary changes in the myoma. However there are no hard and fast rules. Multiple nodules are not necessarily a contra indication to myomectomy. In their presence the surgeon may proceed with myomectomy as far as possible and if he finds that it will not suffice may perform a hysterectomy. Hysterectomy is indicated if the multiple nodules are too widely disseminated. Though myomata of the base of the uterus are especially suited to enucleation good results have often been obtained from myomectomy in cases of myomata of the lateral margin of the uterus even when they were in contact with vessels or situated at the level of the isthmus. When there is a co-existent active inflammation of the adnexa total hysterectomy is imperative but in chronic adnexitis myomectomy may give good results.

During these interventions the authors have found it necessary to open the uterus in 22 cases. There were no complications. The opened uterus was painted with tincture of iodine or mercurochrome. The cervix was never dilated and the drain never left *in situ*. On the other hand great care was taken to obtain perfect haemostasis and to suture the uterine wall in 3 layers with catgut. Much depends upon the stability of the sutures.

In 45 cases the abdominal route was used and in 2 cases only the vaginal route. After removal of the myoma the uterine mucosa undergoes an involution somewhat comparable to that following childbirth, and after from three to six months the dimensions of the uterus are quite normal.

The operative mortality of myomectomy is no greater than that of hysterectomy performed for the same condition. Only 1 of the 47 cases reviewed terminated in fatal sepsis and only 1 of 100 women subjected to myomectomy since 1920 died of embolism. The embolism occurred on the fourth day after operation. The immediate postoperative results are no worse than those of hysterectomy but the temperature may run a little higher for a few days. There seems to be no greater danger of embolism or thrombosis.

The authors have never seen a recurrence of myoma after operation. The risk of recurrence is less in older than in younger women. The risk of the secondary development of carcinoma is certainly no greater than after subtotal hysterectomy, and in fact in most cases in which cancer has developed after operation it has developed so rapidly as to suggest that the initial diagnosis was wrong. It is imperative however that precancerous lesions be recognized. When such lesions are found hysterectomy is advisable. A particular advantage of myomectomy is that it preserves and may even restore reproductive capacity. The authors give a very brief résumé of their 102 cases.

EDITH SCHANKZ MOORE.

Lausitzen, K: Recurrences After Five Year Cure in Carcinoma of the Cervix Radiologically Treated. *Acta radiol* 1933 xiv 575

This report is based on 1016 cases of cancer of the cervix treated at Radiumhemmet in the period from 1914 to 1925 inclusive. A five year cure was obtained in 222. In 1932 163 of the patients with a five-year cure were alive and still free from recurrence. Of the 50 others 24 had died without signs of cancer 6 had died of intercurrent cancer 27 were alive with recurrences, and 2 had died from an unknown cause.

After an observation time of from seven to eighteen years the incidence of recurrence was 12.2 per cent and after an observation time of from ten to eighteen years it was 15.5 per cent. The division of the cases of recurrence into age groups at the time of the first treatment agrees with the division of the total number of cases of cervical cancer. There is no relation between the tendency toward late recurrence and the anatomical type of the tumor. The frequency of late recurrences is the same in the early and the more advanced cases. Deaths without evidence of recurrence occur proportionately more often in the more advanced cases.

In the cases reviewed 6 of the recurrences appeared in the cervix and adjacent portion of the vagina 2 in the corpus uteri 10 in the connective tissue and lymph node areas of the pelvis, 2 in distant parts 5 at a site where the original location could not be determined, and 2 in an unknown site.

Nine of the recurrences were manifested in the sixth year 5 each the seventh and eighth years 2 each in the ninth, tenth, and eleventh years and 1 each in the twelfth and thirteenth years. Of the 4 recurrences developing in the eleventh year or later 3 were definitely and 1 was probably situated in the uterus or close to it.

In conclusion the author discusses the risk of late recurrence according to the number of years of cure.

Lebedev, V: Operative Treatment of Cervical Carcinoma According to the Method of Faure (Operative Behandlung des Collumcarcinoms nach der Methode von Faure). *Ginek* 1933 v 63

The author reports on 340 cases of cervical cancer which he operated upon in the period from 1924 to 1932. As there was no possibility of obtaining irradiation therapy it was necessary to operate in cases of types which are usually regarded as inoperable. Operation is not contra indicated by infiltrations of the parametrium if they have not reached the pelvic wall neither is it contra-indicated by spreading of the cancer to the vaginal wall or poor mobility of the uterus due to changes in the adnexa or the pelvic peritoneum.

The cases reviewed, which were all much the same, are divided into 2 groups. Those in the first group were operated on only according to the method of Wertheim. In 132 operations by this method there were 38 deaths, a mortality of 19.7 per cent. Of the cases in the second group only those in the early stages were operated upon according to the method of

Wertheim. When the infiltration extended from the portio to the parametrium and vagina, the Faure method (Mikulicz tamponade) was employed. In 207 operations in the second group of cases there were 25 deaths, a mortality of 12 per cent. Among these operations there were 83 performed according to the method of Wertheim, with 7 deaths, a mortality of 7.0 per cent, and 119 performed according to the method of Faure, with 18 deaths, a mortality of 15 per cent. The lower mortality in the cases in which the Faure method was used is to be attributed to the lower incidence of peritonitis following the operation. In early cases the Faure method does not offer any special advantages.

The 207 cases of the second group are divided into the following 4 subgroups: (1) 83 early cases, in which there were 7 deaths, a mortality of 7.0 per cent; (2) 46 cases in which the mobility of the uterus was not impaired but the involvement had spread to the vagina and the parametrial tissues, in which there were 2 deaths, a mortality of 4.3 per cent; (3) 56 cases with impairment of the mobility of the uterus, metastases to the lymph glands, and extension of the infiltration to the urinary tract, in which there were 7 deaths, a mortality of 12.5 per cent; and (4) 17 absolutely neglected cases with extensive infiltration into the small pelvis and large masses of glands, in which there were 8 deaths, a mortality of 47 per cent. Six of the 8 deaths were due to peritonitis, 1 was due to cachexia, and 1 to sepsis. In 2 cases it was necessary to implant the ureters into the bowel, and in 1 case to sever the ureter.

Following the Faure method, convalescence was free from complications. Severe peritoneal irritation, which was quite frequent after the Wertheim operation, did not occur after the Faure operation. However the healing of the vaginal wound takes considerable time. The time required for the operation in the second group of 207 cases ranged from forty minutes to one hour and forty five minutes. The use of the Mikulicz tamponade is not a time saving procedure.

VON KROGER (G)

EXTERNAL GENITALIA

Deutsch A: Melanoma of the Vulva (Zur Kenntnis der Vulvamelanome) *Z. Geburt u. Gynäk.* 1933 p 193

Melanomata of the vulva are rare. They may be chiefly carcinomatous or chiefly sarcomatous or of a mixed type. Frequently they resist the most extensive surgical procedures followed by irradiation.

In the case reported by the author, that of a caecotic woman seventy-eight years old it was possible only to remove the soft, blackish, plum-sized, pedicled tumor at its implantation on the posterior wall of the urethral orifice. There remained two dark streaks in the mucosa, one, 3 mm wide, on the anterior wall of the vagina, bordering on the pedicular attachment, and the other 3/4 cm wide and 1 cm long on the undersurface of the anterior commissure. Neither of these dark areas produced an elevation of

the mucosal surface. There were no warts. Six months later the dark streak on the anterior commissure had begun to enlarge, and soon thereafter the patient died. Autopsy was not performed.

Besides many necrotic areas, the tumor showed epithelial cells in an alveolar arrangement containing varying amounts of granular pigment. Mitoses were few.

Melanomata of this type may occur at any age, and in nulliparae as well as multiparae. The assumption of a genetic relationship between the tumor growth and the hypophysis has not been substantiated.

R MEYER (G)

Robinson A. L.: Vagoperineorrhaphy. *J. Obst. & Gynec. Brit. Emp.* 1934 xli, 1

The author discusses the anatomical, functional, physiological, cosmetic, and psychic aspects of the repair of lacerations of the perineum involving the rectal muscle and sphincter.

For reconstruction of the anus and vulva he makes an H-shaped incision starting from the curved lateral border of the retracted anal sphincter behind and extending to an area in front and well outside of the labia minora. The H is completed by cross cutting through the edge of the rectovaginal junction and excising the scar. This restores the natural shape of the vulva and prevents narrowing of the vaginal orifice and shortening of the vagina.

The bowel is mobilized freely, the scar tissue removed, and the mucosa approximated by a continuous suture of plain catgut. The rectal muscle is sutured with a continuous plain Lambert suture.

The rectal sphincter is sutured in the usual manner with No. 3 catgut. From four to six sutures are taken in the levators. In order to obliterate all dead space these sutures are made to include the under surface of the vaginal mucosa. The superficial perineal muscles are sutured in a separate layer and the skin is closed with interrupted sutures.

During the closure of the rectum a 1:30 carbolic solution is used as an antiseptic.

After the operation, catheterization is done for the first four days and the bowels are kept closed for a week. One ounce of mineral oil is given every three hours on the seventh day, 1 oz of castor oil on the morning of the eighth day, and a small olive oil enema on the evening of the eighth day.

Of fifty women subjected to this operation, forty-eight are reported to have satisfactory functional results as manifested by the ability to retain flatus. In one of the two cases in which healing failed to occur tuberculosis of the rectum was suspected.

W. R. FRANK, M.D.

Elaut, L.: Transcervical Derivation of the Urine in the Treatment of Vesicovaginal Fistulas (De la dérivation transcervicale de l'urine dans le traitement des fistules vésico-vaginales). *J. Chir. méd. & chir.* 1934, xxxv, 4

Derivation of the urine has been given special attention in the surgical treatment of urinary fistula

only recently although as early as 1853 Sims included it among the factors essential for successful results.

After pointing out the disadvantages of the procedure in use Elaut describes a new method, transvesical derivation which he believes fulfills the requirements for good results namely protection of the freshly restored vesical wall from injury and contamination by urine.

Transvesical derivation of the urine is established through the anterior wall of the uterine cervix by means of a curved metal tube which carries the urine into the urethra by way of the vagina and through the perineum. The fistula is then closed by denudation and suture according to the classical method of Duboué.

The distance between the vagina and peritoneal cavity varies in different subjects. It is greater in virgins than in multiparae and diminishes markedly after the menopause. In normal subjects during the sexual period it averages 35 mm. In cases of uterine or adnexal lesions it may be 50 or even 60 mm.

The point of vesico-uterine contact is located at the level of the cervix and the greatest transverse diameter of the bladder, about 40 mm. from the line which unites the two ureteral meati.

The point of greatest declivity of the bladder is about 40 mm. behind the Interurethral bar half of the vaginoperineal distance and 18 mm. from the vaginal orifice of the cervix. It is at this point that the tube of derivation should be inserted. Injury to the vessels may be avoided by adhering closely to the median line.

General or spinal anesthesia may be used according to the condition of the patient. The patient is placed in the gynecological position, the head a little lower than the pelvis. The steps in the operation are three namely (1) exposure of the vagina (2) insertion of the tube of derivation and (3) closure of the fistula.

To expose the vagina the labia majora are sutured with a catgut suture to the skin at the level of the sciatic tuberosity. If this exposure is insufficient, the perineum must be incised. With a Museux forceps the anterior lip of the uterine cervix is seized and drawn downward and forward. The anterior vaginal wall then presents at the vulvar opening exposing the fistula. The urinary meatus is repaired and a catheter slipped into the urethra.

The authors have constructed a special tube for transcervical derivation. It is made of non-rusting metal and curved in a semicircle. Its diameter is 5 mm. At its vesical extremity it has a pair of lateral perforations 1 cm. long and 2 mm. wide and just below them two small holes to admit the horsehair sutures. At the extravasical extremity a rubber tube can be attached to carry the urine to the urethra. Within the tube fits a mandrin graduated in centimeters which is 5 cm. longer than the tube and has an annular attachment which can be adjusted and fixed by means of a screw. To insert the tube it may be necessary in some cases first to dilate the cervix

slightly. The mandrin is inserted into the tube so that its point does not pass beyond the vesical extremity of the tube, and the tube thus prepared is inserted through the urethra into the bladder to the point of contact with the uterus. If the fistular orifice is sufficiently wide, a finger may be inserted into the bladder as a guide. Once the point of contact has been located the left index finger introduced into the posterior vaginal cul-de-sac or applied at the level of the dilated uterine cervix will serve to fix the cervix against the point of the tube and to feel it through the muscular wall. The mandrin is then advanced to pierce the bladder and uterus successively. As a result the tube slides forward until its extremity becomes visible in the vaginal orifice of the cervix. The trocar is then removed. In order to avoid injury to the vessels it is necessary to adhere strictly to the median line.

To create a path of derivation a trocar exactly similar to the one employed in inserting the tube is used. With the index finger introduced into the rectum the tube with its mandrin is inserted through the tissues of the perineum for a distance of about 2 cm. from the right lateral margin of the anus and directed toward the cervix. If the perineum has been incised, the pointed extremity of the tube-trocar comes out at the lower end of the incision. If perineal incision has not been necessary the tube trocar will perforate the posterior vaginal wall at the level of the posterior lip of the cervix. The point of the trocar extending beyond the apex of the tube is pushed into the opening of the first tube which is in the bladder. With the use of the vesical tube as a guide, the perineal tube is inserted into the bladder. After its introduction into the bladder the trocar is removed and the tube is inserted to the orifice of the fistula and fixed by means of a horsehair suture passed through the two small holes described. The ends of the suture are seized with a Kocher forceps and passed into the urethral canal, carried outward by the meatus and firmly grasped in the forceps and the forceps are locked. The most convenient position for the tube is determined by passing backward and forward and the tube is fixed in this position at the urinary meatus by the horsehair sutures. Closure of the fistula is then done.

This consists of two stages (1) denudation of the vesicovaginal partition according to the classical procedure of Duboué and mobilization of the flaps and (2) closure in two planes isolated and superposed, first of the bladder and then of the vagina. Stoeckel recommends fine metal sutures or sutures of horsehair for the vagina and a continuous suture of catgut for the bladder. The operation is concluded by placing a Pezzar catheter in the urethra in such a way that the vesical extremity of the catheter does not pass beyond the internal orifice of the urethra. Water is then injected through the urethral catheter. The water should escape completely through the transcervical tube of derivation.

After the operation the patient is placed on her back in bed. The Pezzar catheter is not left in place

permanently. It is introduced only to permit daily irrigation of the bladder with a 1:1000 solution of silver nitrate and is removed after each irrigation. A rubber tube carries the urine to the urinal which is placed between the patient's legs. The patient should remain lying on her back as flat as possible. The escape of urine must be most carefully watched. At the slightest suspicion of obstruction, sterilized water is instilled to remove the clot. However the daily irrigations usually insure good drainage. At about the tenth day the tube is removed. When the horseshair sutures are cut the tube will come out with slight traction. The tunnel it leaves closes completely. Its closure may be accelerated by giving the patient ergotone for a few days.

Transcervical derivation is superfluous for small fistulae but is indicated in cases in which there has been an extensive loss of tissue. It would probably be of use also in cases of vesicocervicovaginal fistula. Two cases are reported in detail.

EDITH SCHWABER MOORE

MISCELLANEOUS

Schockaert, J. A. and Stebke, H.: The Content of Gonadotropic Hormones in the Anterior Lobe of the Human Hypophysis (Gehalt des menschlichen Hypophysen vorderen Lappens an gonadotropen Hormonen). *Zs. Krebsf. u. Gyn.* 1933 p. 74.

It has never been possible to produce premature spermatogenesis in young animals with gonotropic hormones obtained from urine but Schockaert achieved this effect by injecting an emulsion of the anterior lobe of the hypophysis. The authors used the human hypophysis in a similar manner to determine whether a greater quantity of gonadotropic hormones could be obtained in this manner than by the implantation done previously. For this purpose anterior lobes of the hypophysis, within twenty-four hours after death, were ground in a mortar with about three times their volume of sterile sand and about 0.5 cc. of sterile water. The sediment of the reddish-yellow fluid, which was obtained by brief centrifugation, yielded a considerably larger amount of the gonadotropic hormones of the anterior lobe of the human hypophysis than was demonstrated previously by implantation.

Up to 4,000 mouse units of Hormone A and up to 1,500 mouse units of Hormone B were found in the anterior lobe of the hypophysis of women and up to 3,000 mouse units of Hormone A and up to 1,000 mouse units of Hormone B in the anterior lobe of the hypophysis of men. Therefore 1 gm. of this organ may contain from 8,000 to 10,000 mouse units of Hormone A and about 3,500 mouse units of Hormone B. The observation of Philipp that after delivery and after abortion the hypophysis of women contains very much less gonadotropic hormone than the hypophysis of men and non-pregnant women, was confirmed. Fifteen days after abortion considerable quantities of hormone were again found. The difference in the hormone content of the anterior

lobe of the hypophysis of the adult and the newborn is considerable for even in one-fifth of the anterior lobe of the hypophysis of a newborn child no gonadotropic hormone could be demonstrated. In the anterior lobe of the hypophysis of women the content of gonadotropic Hormone B appeared to be greater after the menopause than at the time of sexual maturity. In diseases of long duration which lead to death from marasmus and cachexia, there is a decrease in the hormone content of the anterior lobe of the hypophysis. The high hormone values found explain why up to this time better results were obtained from the implantation of fresh animal hypophysis (Ehrhardt) than with the hormone content of the urine of pregnancy which had only a comparatively slight therapeutic effect. H. STENZEL (G)

Witherspoon, J. T. Diurnal Incontinence in Women. *Arch. Surg.* 1934, LVIII, 548.

Diurnal incontinence usually follows the trauma of childbirth but is often associated with no visible injury or infection of the bladder and has no relation to vesical fistulae. Its onset is slow and insidious. The first sign is the escape of a few drops of urine when the woman coughs, sneezes, or makes any sudden movement which increases the intra-abdominal pressure. The condition may progress slowly until a continuous leak occurs, but occasionally it remains unchanged. Its limits vary between a slight dribbling on exertion to loss of urine which continues even when in the recumbent position.

The condition should not be confused with frequency of urination in which there is no wetting of the clothes from urinary dribbling or leakage. Urgency of urination is also different from incontinence and frequency. In urgency the desire to urinate must be satisfied at once. With increased frequency and urgency there is always first the desire to urinate, whereas in incontinence the urine passes without the desire to urinate and even against voluntary effort to control it. The condition is well described as "leaky bladder."

Diurnal incontinence may occur in nulliparous women but is most common in parous women over forty years of age. In the latter its degree is in general dependent upon the number of children borne.

Contrary to the current belief diurnal incontinence is not always associated with the more obvious forms of genital displacements, cystocela and prolapse. In fact in prolapse retention of urine occurs.

The diagnosis of diurnal incontinence is not always easy. It must be remembered that urinary control is less certain in women than in men. It is often difficult to determine whether the incontinence is due to disturbance of the nerve control of the sphincters or weakness or injury of the muscles. In the case of the nulliparous woman who has never had an operation it must be assumed that the condition is the result of nerve disturbance or progressive muscular weakness. With the patient in the knee

chest position and the bladder distended with air or water the function of the sphincter may be observed with the endoscope. When the tonicity of the vesical sphincter is normal the vesical sphincter closes over the end of the endoscope as the instrument is withdrawn. In diurnal incontinence prompt contraction of the sphincter generally does not occur.

The act of urination is performed through the reciprocal stimulation and inhibition of the vesical sphincters and the bladder musculature aided by a voluntary increase of the intra-abdominal pressure. The complexity of the urination reflex is emphasized. No matter what the causative mechanism at the onset of urination, immediate cessation of urination is difficult after the urine has begun to pass the sphincteric levels as the sphincteric control is then reflexly inhibited.

Weakness of the natural fixation of the base of the bladder is believed by the author to be an important factor in the mechanism of diurnal incontinence. Anteriorly the neck of the bladder and upper part of the urethra are attached to the symphysis pubis by comparatively strong fibrous bands while posteriorly they are incorporated only with the anterior vaginal wall which is prone to become displaced as the result of obstetrical injuries. Relaxation of the inferior neck of the bladder and posterior urethra drags on the anterior vesical supports and forms a type of suspensory ligament which causes a funnel shaped orifice to occur at the internal urethral meatus. It seems probable that in the presence of such a funnel-shaped relaxation of the internal sphincter (ready to pass urine) and the associated complex urination reflex (when once the urine passes the urethral sphincter more urine flows freely) incontinence would be the result of sudden abdominal strain even when no cystocele is present. In the presence of cystocele, even when incontinence is absent, the musculofascial sheath retains its tension in the region of the neck of the bladder and urethra both posteriorly and anteriorly but is weakened over that portion of itself which is angulated on the anterior vaginal wall and is ultimately inserted into the cervix. The damage causing incontinence alone and that causing cystocele alone must therefore occur at different places. Incontinence is definitely associated with weakness of the posterior aspect of the neck of the bladder and the urethra, but the anterior attachments to the pubis remain intact and thus support the base of the bladder by the anterior wall of the sphincter. True cystocele is a bladder hernia protruding between the edges of the separated fascial layer supports and therefore is not necessarily associated with damage to the sphincter.

The operative technique used by the author is similar to that advocated by Kelly. The purpose of the operation is to insert two tiers of mattress sutures to include and imbricate on themselves the tissues of and adjacent to the neck of the bladder the sphincter muscle, and the posterior urethra so that these surrounding fibromuscular tissues are

enfolded on themselves against the floor of the posterior urethra. By this means the urethral lumen is narrowed from side to side at this point. The adjacent tissues are sufficiently secured so that there is re-established a point of support from which the sphincter can act. Indeed, if plication is done where it is believed the sphincter of the bladder should be located and the sphincter is restored to its normal location, cure of the incontinence will usually be obtained. Undue tension on the sutures must be avoided as it may cause sloughing. An important stitch is the suture on the neck of the bladder to insure additional narrowing of the urethral orifice superior to the sphincter. The exact placing of this suture is not always easy.

Of most importance in the postoperative care is the prevention of infection and overdistention of the bladder. The procedure of choice for this purpose is the insertion of an indwelling catheter at the time of operation or catheterization every six or eight hours after the operation.

Serdukoff M. G. and Soulimova A. N.: The Use of Avertin Anesthesia in Gynecology and Obstetrics (Sur l'emploi de l'anesthésie à l'avertine en gynécologie et obstétrique) *Gynécologie* 1933 xviii, 542

Avertin is highly recommended as a hypnotic for general anesthesia. To make the sleep as normal as possible, the patient must be prepared psychically and must be given a hypnotic the night before and a narcotic shortly before the operation. Avertin prevents the development of psychic disturbances in the pre-operative and postoperative period. The retrograde amnesia of avertin anesthesia depends upon this influence.

To render avertin anesthesia harmless, it is necessary to regulate the dose of avertin according to the constitution, height, and weight of the patient. The state of nutrition and the presence of cachexia and anemia must also be considered.

Avertin is contra-indicated in diseases of the kidneys, liver and colon, ruptured ectopic pregnancy and hypotonia.

Avertin anesthesia is especially to be recommended for patients with pulmonary and cardiac disease, hypertension, or cardiac sclerosis and for those who are old. It is ideal for prolonged operations.

ISAAC ANDRUSSIER, M.D.

Turunen A. O. I.: Postoperative Adhesions and Their Prevention Especially After Gynecological Laparotomies. Clinical and Experimental Investigations (Ueber die postoperativen Verwachsungen und deren Verhütung speziell im Anschluss an gynäkologische Laparotomien. Klinische und experimentelle Untersuchungen) *Acta Soc. med. Fennica Duodecim* 1933 xviii, Fasc. 2, 3, 4.

After gynecological operations the formation of adhesions is a very common complication which impairs the results of operation, gives rise to symptoms

and in many instances necessitates a second laparotomy.

The author's clinical and experimental material seems to show that the most important causes of the formation of adhesions following gynecological operations are mechanical injury of the peritoneum and the technical operative procedure. Bacterial infection, in itself is apparently of only secondary importance.

Clinical experiments indicate that the use of the seroserosus method of suture and careful covering of all rough surfaces produced by the operation and, if necessary, peritonization with the aid of the sigmoid or rectum and the Wichmann small intestine peritonization will considerably reduce the incidence of postoperative intestinal occlusion and the symptoms produced by adhesions which necessitate relaparotomy.

In experiments on animals it was found that considerably fewer adhesions developed at the seroserosus site of peritoneal suture than at the site of needle puncture. This was confirmed occasionally at relaparotomies, which showed also that when peritonization was done with the use of the small intestine, sigmoid, and rectum there is a striking decrease in the formation of adhesions at the site of operation.

No disadvantage was observed during convalescence or in the subsequent condition of the patient from the use of these methods of suture and peritonization. They do not seem to increase either the postoperative mortality or morbidity and under certain conditions seem to have such a favorable effect that in cases in which the patient's general condition allows the slight increase in the duration of the operation which they require their use may well be recommended.

LOUIS NEWELL, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Mack, H. C. and Agnew, G. H.: A Comparison of the Aschheim Zondek and the Friedman Tests in Normal and Abnormal Pregnancy. *Am J Obst & Gynec* 1934, XLVII, 232

The literature on hormone tests for pregnancy and the authors own experience with 546 Aschheim Zondek and 566 Friedman tests demonstrate that both methods are very accurate but that the Friedman test is slightly more accurate as well as easier and quicker than the Aschheim Zondek test.

Of proved cases of normal pregnancy the authors found the Aschheim Zondek test accurate in 97.3 per cent and the Friedman test accurate in 97.8 per cent.

Of the cases of patients definitely determined not to have been pregnant an accurate result was obtained by both methods in 98.5 per cent.

In cases of abnormal or interrupted pregnancy the result of the test should be interpreted with the clinical findings. A negative test signifies either absence or interruption of pregnancy. A positive test strongly suggests the presence of living fetal elements, but because of temporary persistence of elimination of the hormone, it does not exclude recent interruption of the pregnancy or fetal death.

In cases of hydatidiform mole and malignant chorionepithelioma, the amount of hormone excreted is many times greater than that in normal pregnancy. The persistence of positive tests after treatment of these neoplasms strongly suggests continued chorionic proliferation. EDWARD L. CORWELL, M.D.

Mikulicz-Radecki, F. von: Placenta Prævia (Placenta prævia). *München med Wchnsch* 1933, II, 1848.

Although the claim of Stoeckel that every hemorrhage in the second half of pregnancy and at the beginning of labor is due to placenta prævia is generally held to be true and is absolutely decisive for the midwife the physician must bear in mind the fact that occasionally a number of other causes of hemorrhage must be considered. The author briefly reviews the causes and dangers of placenta prævia and emphasizes the necessity for quick action on the first appearance and the recurrence of bleeding.

Placenta prævia demonstrates with great clearness the relative efficiency of home and clinical obstetrics. Under all circumstances the woman with placenta prævia belongs in the hospital where the mortality of this condition can be reduced to one-third the mortality of delivery in the home. The chance of saving the life of the child is also considerably better in hospital delivery. The advantages of hospital delivery lie in the absolute preparedness for

operation the inclusion of cesarean section in the treatment for placenta prævia, the certainty of sufficient assistance in case of tearing of the cervix or atony and the constant possibility of immediate blood replacement.

For the diagnosis the symptom of bleeding must be considered absolutely sufficient. Confirmation of the diagnosis by vaginal examination without willfulness and preparation of the physician to carry out the subsequent treatment is malpractice.

In discussing the various therapeutic measures for placenta prævia the author characterizes packing of the vagina as a very poor method of treatment. If rupture of the membranes is not sufficient version is the surest method but in this procedure nothing may be done under any circumstances to save the life of the child. Metreuryxia must be reserved for cases in which the loss of blood is still slight. After delivery there is very great danger of bleeding. Immediate expression or manual separation of the placenta is necessary if there is renewed hemorrhage. Therefore, after delivery of the placenta tight packing of the vagina and the application of a pressure T bandage are advisable. The practitioner outside of the hospital must direct his entire attention to the mother and cannot consider the child.

KESLER (G)

Nuernberger, L.: The Modern Treatment of Vomiting in Pregnancy (Die moderne Behandlung des Schwangerschaftserebrens). *Fortschr d Therap* 1933 ix 390

In reviewing the modern treatment of vomiting in pregnancy the author emphasizes the importance of differentiating between emesis and hyperemesis. In emesis, successful results may generally be obtained with light narcotics (luminal, valium, nautosan, codein, anesthesin, chloroform water or iodine water). In hyperemesis successful treatment is much more difficult and requires removal of the patient from the home environment, temporary withholding of nutriment or water by mouth, the subcutaneous administration of physiological salt solution and the administration of 10 per cent glucose solution by proctodyna. In the author's opinion the administration of insulin is not necessary. In some cases injections of saline solution, horse serum, or pregnancy serum may be required. It is important also to know when interruption of the pregnancy should be considered. There is no absolute criterion for deciding this. The best guide is the clinical condition. According to Saenger there is no danger before the ninth week. Therefore interruption of the pregnancy need not be considered before the end of that time. After that length of time an increase in the bilirubin in the blood above

2 mgm per 100 ccm the appearance of albumin in the urine an increase in the temperature a decrease in the amount of urine, symptoms of neuritis, and an increase in the pulse frequency are of great prognostic importance. Acetonuria alone cannot be considered an indication as it indicates merely an inadequate carbohydrate intake. Particularly noteworthy besides the increase in the bilirubin in the blood is the rise in the temperature, which must be considered a very serious sign as it is evidence of an infection in the weakened organism or a so-called toxic fever due to irreparable cell changes. After interruption of the pregnancy a blood transfusion may be necessary. Later complications mentioned are polymyositis, Landry's paralysis, and, in the later months of pregnancy eclampsia and acute vel low atrophy of the liver. KUSALA (G)

LABOR AND ITS COMPLICATIONS

Begal, P. W. The Frequency of Perineal Laceration (Zur Frage der Häufigkeit der Perinealrisse). *Zentralbl. f. Gynäk.* 1933, p. 1755

Beginning with a discussion of the relative efficiency of clinic and home obstetrics, the author reports his findings in a study of the daily records of midwives. These figures, which include operative procedures as well as maternal and infantile mortality, are compared with the figures of voluntary reports made by physicians in reply to a questionnaire sent out by Winter.

The author reviews a total of 5,335 deliveries by midwives. Whereas the deliveries by obstetricians which were reviewed by Winter included 1,100 operative deliveries, those reviewed by the author included only 416 operative deliveries. Nevertheless the absolute number of stillbirths reported by the midwives exceeded the number which were reported by Winter.

The incidence of early death (up to the tenth day) of the infants delivered by operative measures was also determined. This was very high, being more than 6 per cent after extractions and 12 per cent after versions. Very many of the women had poorly healed perineal lacerations. The author found that, of 200 women, one fourth had poorly healed perineal tears of which they were unaware.

Three thousand five hundred spontaneous hospital deliveries were compared with the same number of spontaneous deliveries attended by midwives with regard to the frequency of perineal laceration. In the cases of women delivered in the hospital the incidence of tears was 10.63 per cent, whereas in the cases of women attended by midwives it was only 4.1 per cent. However this fact does not warrant the conclusion that obstetrics in the home is far superior to obstetrics in the hospital. The difference in the reported incidence of tears can probably be explained more correctly by the assumption that, under the unfavorable conditions attending delivery in the home, the occurrence of a perineal tear may not be recognized or that the midwife does not desire to

report herself as inexperienced and incapable. In lay circles the midwives who call upon the physician least frequently are believed to be the most efficient. The author sees a remedy for this state of affairs in the old form of bonus arrangement whereby the midwife was awarded an additional fee for calling in a physician. To prevent the erroneous conclusion that the high incidence (10.63 per cent) of perineal lacerations in the hospital is to be attributed to the training of midwife students, the author has divided the frequency of perineal laceration according to whether the perineal support was carried out by physicians, volunteer assistants, interns, midwife nurses, or midwife students. The incidence of tears was lowest, 17.7 per cent in the cases in which the perineum was supported by midwife nurses, and next lowest, 10.7 per cent, in those in which it was supported by midwife students. In the cases in which the support was given by physicians or interns it was higher. This is explained by the fact that the physicians took a hand only in complicated cases.

From these figures it is evident that the incidence of perineal tears will be relatively high even in the cases of women attended by excellent midwife nurses of long experience, and that the incidence recorded in their daily records by midwives outside of hospitals is doubtless too low. HARRY KROENIG (O)

Olsen, A. Interference with Labor by Obstructing Tumors (Geburtsbehinderung durch entzündete Geschwülste). *Woch. f. Td.* 1933, p. 538

The author reports three cases of interference with labor by an obstructing tumor.

The first case was that of a thirty-year-old primipara at term. A cervical tumor the size of a child's head extended half into the true pelvis. The cervical os was half-moon shaped with the convexity directed anteriorly. The tumor was situated in the posterior wall. Cervical cesarean section was done. After enucleation of the tumor a myoma, the incision was extended upward and a 2,600-gm living female infant 50 cm long was delivered. The tumor bed was then sutured and a drain extending from the cavity of the uterus into the vagina was introduced. The patient recovered. Histological examination showed the tumor to be a fibromyoma with edema, necrosis, and inflammatory infiltration.

The second case was that of a primipara sixteen years old who was within four weeks of term. A firm and only very slightly movable tumor the size of a fist, was found to the left of the sacrum in the lesser pelvis. At laparotomy, a retroperitoneal tumor firmly attached to the first and second sacral vertebrae was removed chiefly by blunt dissection. The left ureter which ran downward over the tumor was displaced anteriorly and to the left. The rectum was displaced posteriorly and to the right. After the introduction of several sutures in the bed of the tumor the wound was closed. The pregnant uterus was left unopened. The operation was followed by a rise in the temperature. Seven days later labor pains and rupture of the membranes occurred and a macer

ated fetus was delivered after perforation. The abdominal wound healed by secondary intention. Microscopic examination of the tumor showed it to be a neuroganglioma. The author believes it would have been better if the cesarean section had been performed before removal of the tumor.

The third case was that of a primipara thirty-eight years old. Since her twentieth year of age subcutaneous hypertrophic flaps of skin (*cutis pendula*) had formed in various parts of her body. The skin overlying these parts showed areas of elephantiasic changes and pigmentation. Hypertrophic folds of skin almost completely obstructed the approach to the vagina. In spite of this a pregnancy of ten weeks duration was found. Around the vagina it was possible to feel tumor formations similar to those felt beneath the external skin. The cervix uteri was very difficult to reach and the portio could not be seen with the examining mirror. The pregnancy could have been interrupted only by laparotomy. Throughout the pregnancy moderate emesis occurred. In the ninth month the vagina remained narrow and unyielding. Labor began at the proper time with rupture of the membranes. Cesarean section was performed immediately. A low cervical incision was impossible because of the presence preperitoneally, and especially in front of the bladder of large pads of soft connective tissue which extended into the true pelvis. Therefore it was necessary to prolong the incision upward into the corpus uteri. However it was later possible to cover the incision completely with bladder peritoneum. The child was a full term healthy boy weighing 3,700 gm. and 53 cm long. There were no complications after the operation. The only analogous case on record was a case of obstruction of labor by a fibroma molluscum reported by Scharpenack in 1905.

SARAZUE (G)

Kessler R., and Uphoff H.: Ten Years of Abdominal Cesarean Section (Zehn Jahre abdominale Schnittentbindung). *Zentralbl. f. Gynaek.* 1933 p. 2537.

The authors reviewed the obstetrical cases in the Kiel Obstetrical Clinic in the period from 1923 to 1932. Of the total of 11,200 cases cesarean section was done in 303 (3 per cent). In 221 of the latter the chief indication for the operation was disproportion between the head and the pelvis. In much more than half of the cases in which cesarean section was done labor was in active progress before the indication for the operation was fully established. Seventeen patients had a fever above 38.1 degrees C. Some of the latter had been examined vaginally before they entered the Clinic and in some of them the membranes had ruptured. The maternal mortality in this group was 27 per cent (6 deaths). According to the autopsy reports, 2 of the deaths were due to peritonitis, 3 were due to emboli, and 1 was due to severe myocarditis. Four of the 6 women who died had been in labor for more than forty hours before their admission to the Clinic.

Of special interest were the cases in which a condition of the soft parts such as vaginal stenosis, the status following an operation for vesicovaginal fistula, or ventral fixation with threatening uterine rupture constituted the indication for the cesarean section. Of the 3 women who died, 2 were admitted to the Clinic with a high fever. All 3 died of peritonitis.

In the 61 cases of placenta previa in which cesarean section was done, there was 1 death. This occurred from an embolus on the twelfth day after the operation.

In the 41 cases of severe toxemia in which cesarean section was performed there were 5 deaths. Three of the women who died were admitted to the Clinic in deep coma.

The total mortality irrespective of the cause of death was 4.1 per cent (15 deaths). According to the autopsy reports the operation could be held responsible for only a very small percentage of the fatalities.

In the second part of the article the infant mortality is discussed. Of the 370 infants 32 (8.6 per cent) died. This mortality is very favorable when it is considered that 4 of the infants were dead before the cesarean section was performed and 11 died of severe ashenia.

A second cesarean section was performed in 17 cases and in 4 of these was followed by sterilization. In 7 cases the operation was performed for the third time on the same patient but was followed by an eventful recovery.

In conclusion the technique of the operation as it is performed at the Kiel Clinic is described briefly, and the necessity for accurate determination of the indications is emphasized.

KESSELER (G)

PURPERIUM AND ITS COMPLICATIONS

Nelson W O: Studies on the Physiology of Lactation. III. The Reciprocal Hypophyseal Ovarian Relationship as a Factor in the Control of Lactation. *Endocrinology* 1934, xvii, 33.

In experiments on pregnant guinea pigs the author found that the injection of extract of the anterior lobe of the pituitary gland caused abortion which was followed by lactation. When oophorectomy was performed on pregnant guinea pigs abortion did not always follow and lactation occurred only when the pregnancy was terminated. Removal of the entire pregnant uterus did not cause lactation unless extract of the anterior lobe of the pituitary gland was administered but complete removal of the pregnant uterus with the ovaries was followed by lactation. Lactation occurred also after removal of the ovaries and of the fertile uterine horn in cases of unilateral pregnancy. Lactation did not occur when the ovaries and embryos were removed with out removal of the placenta, but it followed expulsion of the placenta.

In parturient animals lactation was inhibited by certain amounts of estrin alone and was stimulated

when certain amounts of oestrin were combined with pituitary extract.

Castrated animals which had been recently delivered were able to suckle their young as successfully as the control animals.

From these results the author concludes that the ovarian hormones are active in the production of mammary gland growth during pregnancy but inhibit lactation during that period. The high content of ovarian hormone in the pregnant animal inhibits the secretion of the lactation-inducing hormone of the anterior lobe of the pituitary gland and acts directly on the mammary glands. With the decline in the ovarian hormone content at parturition the inhibitory influences are removed, the lactation-inducing hormone is secreted, and lactation results.

The maintenance of lactation for extended periods of time seems to be partially under the control of the pituitary hormone but a more important factor is the stimulation of the secretory tissue by the continual draining of the glands in suckling. It is suggested that suckling may operate through the anterior lobe of the pituitary gland to stimulate further milk production.

A. F. LANE, M.D.

Cathala and Bernard-Griffiths: The Ecthymotic Cervicofacial Mask of Parturient Women (Masque ecthymotique cervico-facial chez les accouchées). *Bull. Soc. d'obst. et de g. de Par.* 1933 xxx, 735.

The authors report the cases of two primiparae and one para-II who developed a fine purpura over the face, neck, and the upper part of the thorax within twenty-four hours after delivery. In one case the purpura was accompanied by subconjunctival ecchymoses. In all three cases delivery was spontaneous. In one case it was perhaps a little longer and more painful than usual, but in none of them was expulsion accompanied by particularly violent effort. All of the children were free from signs of trauma and developed normally.

The mechanism responsible for this ecthymotic mask after delivery is similar to that occurring in traumatic compression of the thorax and abdomen, but in the obstetrical cases the trauma, tumescence, and cyanosis are less than in traumatic cases. While the literature suggests that the condition is rare, the authors saw the three cases reported in this article in the course of a few months.

In obstetrical as well as traumatic cases of ecthymotic mask there is a reflux of blood into the superior vena cava and its tributaries which causes a congestion in this region where there are no valves to prevent the reflux of blood. In the arms, suffusion is prevented by valves. The reflux may occur not only into the superficial veins, but also into the deep veins, even the intracranial veins. Therefore in cases of intense congestion of the face during labor particularly if the patient's efforts are very violent, the labor should be terminated at once to prevent serious consequences.

As many parturient women make more violent efforts during expulsion of the fetus than were made by the women whose cases are reported in this article, the authors believe it probable that some other factor besides effort is involved in the development of the ecthymotic mask. In the cases reported there was no disturbance of blood coagulation, but as in the two cases in which the ligature sign was tested this sign was positive and in one of them it was very intensely positive there was, apparently a certain fragility of the blood corpuscles.

AUDREY GOSS, Moscow, M.D.

Lemierre, A. and Bernard J.: A Study of Puerperal Scarlet Fever (*Étude sur la scarlatine puerpérale*). *Bull. et mem. Soc. méd. et biol. de Par.*, 1934, 1, 160.

The authors report their observations in twenty-three cases of puerperal scarlet fever and review the literature on the condition. They believe that many of the cases reported heretofore were not cases of true scarlatina. Of their own series, the diagnosis was doubtful in only two. While the clinical picture varies considerably the variation is no greater than in the non-puerperal type of scarlet fever. In the authors' opinion the two conditions are identical as the onset, period of incubation, and buccal and cutaneous manifestations are the same.

Primiparae are affected more frequently than multiparae. Only three of the authors' twenty-three patients were multiparae. The disease is rare in pregnancy. Of the authors' cases, it occurred during pregnancy in only three. The onset is usually abrupt and accompanied by the classical symptoms of fever, sore throat, and vomiting preceding the appearance of the eruption. Sore throat may be the first and only symptom and is rarely absent. The characteristic tongue changes are always present. Laboratory examinations confirm the theory that the non-puerperal and the puerperal infection are identical. Urubacteruria is constant, and an increase of the blood urea and eosinophilia are frequent. Positive blood cultures of the streptococcus haemolyticus were obtained in only three of the authors' cases. In the others the blood cultures were always negative. Localized streptococcal lesions of the skin, mucous membranes, breast, and joints were noted in several cases. In the data obtained there was no positive evidence that the streptococcus was the etiological agent even though it was demonstrated definitely in several cases and was presumably present in others. The Dick test was not used. The Schell-Charlton reaction was positive in all except one of the cases in which it was tried.

Abortion occurred in only one case and in that instance was presumably due to the infection. In 53 per cent of the cases the incubation period was very brief—from two to five days. A definite history of exposure to known cases of scarlet fever was given in only 15 per cent of the cases. Ten patients recovered without incident. Of the remaining thirteen, all had more or less severe complications and three died.

Seventeen (75 per cent) of the viable infants survived. The others died of streptococcal infections of various types such as septicaemia and erysipelas.

The article is concluded with abstracts of the histories of the twenty three cases.

HAROLD C. MACK, M.D.

NEWBORN

Hemmuth F. A.: Birth Injury of the Occipital Bone with a Report of Thirty Two Cases. *Am J Obs & Gynec.*, 1934, xxvii, 194.

Because of the weakness and close proximity to the medulla oblongata of the synchondrosis between the pars squama and the pars lateralis of the occipital bone, the base of the fetal skull is susceptible to grave traumatic injury during delivery. The injury consists of a separation, an osteodistasis.

The 32 cases of such injury reported by the author were found in 166 consecutive autopsies performed by him on infants born dead or dying soon after birth during a period of two years at the New York Lying In Hospital. Occipital osteodistasis was found in 48 per cent of the autopsies on infants delivered by version and breech extraction, 33 per cent of those on infants born by forceps delivery, 33 per cent of those on infants born by primary breech extraction and 23 per cent of those on infants born

spontaneously. In 72 per cent of the cases the squama was depressed beneath, and overrode, the pars lateralis, and in 38 per cent there was gross traumatic injury of the cerebellum. Of 48 consecutive autopsies performed on infants delivered by version and extraction or by primary breech extraction, occipital diastasis was found in 42 per cent, a frequency equal to that of subdural cerebral hemorrhage and of tentorial laceration, and twice that of fracture of a vertebra. Of the 30 infants delivered by forceps, occipital injury was found in 10. In infants born by low forceps delivery it was rare. Two infants born by spontaneous vertex delivery in which great difficulty was encountered in the delivery of the shoulders presented the injury.

An analysis of the mechanism of occipital osteodistasis suggests the following rules for its prevention:

1. In forceps deliveries, careful cephalic application should be made and the line of traction should not force the occiput directly against the symphysis.
2. Delivery of the after-coming head, the occiput should be protected at the symphysis by attention to the direction and force of traction.
3. Manual traction on the head for delivery of the shoulders should be applied to the sides of the head with avoidance of the occiput.

EDWARD L. CORNELL, M.D.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY AND URETER

Simpson S. L.: Clinical and Pathological Aspects of the Adrenal Glands. *Proc. Roy. Soc. Med. Lond.* 1934, LVII, 313

Simpson believes that 75 per cent of cases of Addison's disease are due to tuberculosis, 20 per cent to atrophy and 5 per cent to other causes such as syphilis and secondary neoplasm. He regards it as possible that atrophy of the adrenal cortex may be associated with a similar condition of the pancreas or thyroid leading directly to diabetes mellitus or myxoedema.

The treatment of persons presenting the symptoms associated with Addison's disease is based on the findings of experimental work on animals and consists of the intramuscular or subcutaneous administration of cortical extract.

Experiments have shown that it may be advisable to administer cortin intermittently in large doses. The estimation of the action of cortical extract is based on its effect on adrenalectomized animals.

While the part of the adrenal which is essential to life is the cortex, there is a great deal of evidence that pathological changes in the medulla play a part in Addison's disease.

The author discusses the adrenogenital syndrome and reviews the clinical manifestations of adrenal tumors and the theories of pseudo-hermaphroditism, homosexual precocity in males and females, heterosexual precocity in the female, masculinization of the female, and feminization of the male.

In conclusion he says that much investigation remains to be done by the biochemist, physiologist, experimental pathologist, and clinician before the relationship of the adrenals to the anterior lobe of the pituitary gland will be elucidated.

ELMER HARR, M.D.

Fowler O. B.: The Anatomical and Functional Disturbances of the Adrenal Gland in General Visceroptosis. *J. Urol.* 1934, XLV, 363

The most important beneficial results of nephropexy in visceroptosis are due, perhaps, to restoration of the adrenal glands to normal function. The author believes that many of the symptoms of visceroptosis are caused by hypocortinism resulting from adrenal atrophy. He makes no selection of cases of nephropexy. His method, a modification of Longyear's nephrocolopexy, he calls "adrenonephrocolopexy." An important part of the procedure is the freeing of the ureter. In the suspension of the kidney the nephrocolic ligament is used. To prevent damaging pressure on the adrenal, care must be taken not to draw the kidney too high.

ANDREW McNALLY, M.D.

Payne A. E.: Three Cases of Addison's Disease Radiographically Confirmed. *Brit. J. Radiol.* 1933, VI, 747

Following a brief résumé of the literature the author reports three cases of Addison's disease in which the roentgenographically suggested calcification of the suprarenals was studied at autopsy.

In all of the three cases the cardinal symptoms of pigmentation of the skin and oral mucous membrane, gastric disturbances of varying degree, low blood pressure, and asthenia were present and death resulted from the gradual increase of the general and cardiac asthenia. In all three cases also other tuberculous lesions were present and the condition occurred at the usual age period, i.e., the third or fourth decade. While the first patient was only twenty-two years of age and had few tuberculous lesions elsewhere, the two others were thirty-six and thirty-seven years of age respectively and had widespread tuberculous lesions of very long standing in other parts of the body.

The patient thirty-seven years old had a long history of tuberculosis. He had been putting up a good fight for many years until the suprarenal involvement turned the tide decisively against him. In February 1913, he had glands excised from the neck. In July 1913 he had a "rib abscess." In 1918, he was in the hospital with "bladder trouble" and the urine was said to be full of tubercle bacilli. The symptoms of Addison's disease began to appear in 1929, three years before his death. Thereafter he developed attacks of indigestion, gastritis and muscular rheumatism, gradually increasing general weakness, shortness of breath, and pigmentation of the skin. When he was admitted to the hospital the right kidney was palpable, the urine contained blood, pus, and albumen, and X-ray examination indicated calcification of the entire right kidney, the right ureter and both suprarenals, a calcified mass in the right costodiaphragmatic angle, presumably the remains of the previous "rib abscess," a large branched calculus in the pelvis of the left kidney and old calcified lesions in the apices of the lungs and the cervical and mediastinal glands. The roentgenograms were taken a few days before death, which occurred eight days after the patient's admission.

The autopsy report was as follows: "Both suprarenals calcified and enlarged. Right kidney consists of a mass of caseous material. Ureter caseous. Left kidney contains a branched stone in the pelvis. Tubercles in the left seminal vesicle and the left lobe of the prostate. Lungs adherent throughout. Tubercles scattered throughout both. A calcified mass 2 by 1 in. in the right diaphragm, more on the abdominal than the thoracic side, causing an indentation in the liver.

The X ray findings suggested that the right kidney if not of stony hardness, was at least of a chalky consistency. This, however was not the case. The kidney cut quite easily like cheese, and was only slightly gritty here and there. The capsule and the walls of the loculi were tough but the contents of the loculi were putty like masses which on chemical examination were found to have a high content of calcium chiefly in the form of carbonate and phosphate but on incineration did not leave a very large inorganic residue. The author calls special attention to this fact because of the possible tendency of roentgenologists to use the term calcification when the pathologist would use the term caseation and to regard roentgenographic calcification as representing that degree of chalky or stony hardness which spells finality whereas the pulsatious material of high calcium content and marked roentgenographic visibility may still be sufficiently organic to contain living organisms and become the site of a residual abscess.

Calcification of the suprarenal glands which may be demonstrated roentgenographically occurs in many cases of Addison's disease and in some cases may be the deciding factor in the diagnosis.

Addison's disease is not the sole cause of pigmentation of the skin. Osler cited fifteen other causes, many of which are associated with such marked debility that the diagnosis may be doubtful for a time. While a negative finding would not be of any help in such doubtful cases, a positive finding would settle the question if due care were taken to exclude other possible causes of opacity in the same site. The most likely of these are probably calcified rib cartilages and calcified glands. A comparison of anteroposterior with postero-anterior views, a screen examination for mobility or perhaps a stereoscopic mathematical localization of the position in relation to the transverse process of the adjacent vertebrae should make it possible to separate these opacities comparatively easily.

It is agreed that the great majority of cases of Addison's disease are due to tuberculous tuberculo-sis. Although rarely Addison's disease may be present with involvement of only one gland. In one of the six tuberculous cases recorded by Addison the condition was unilateral. If it is possible for unilateral involvement to cause not only symptoms but even death, as in Addison's case, it seems extremely likely that many other unilateral cases occur without symptoms. In fact it is not unlikely that most cases of the disease have a preliminary symptomless period during which only one gland is involved and that in a certain proportion a roentgenographic diagnosis might be possible during that period. It should not be forgotten, moreover that in certain rare cases whether because of the existence of a supernumerary gland or because of sufficiency of the extra suprarenal chromaffin system the characteristic symptoms are absent even when both glands are involved.

C. TRAVERS STEPHEN, M D

Burke E M: Tumors of the Adrenals. *Am J Cancer* 1934, xv, 338

Among 371 cases of malignant tumors coming to autopsy there were 49 cases in which the adrenal glands showed metastatic involvement and 2 cases of primary adrenal tumor. In one of the latter the case of a three year-old boy the tumor was in the medulla and in the other that of an elderly woman it was in the cortex of the right adrenal.

Malignant epithelial tumors of the breast, oesophagus, stomach, testicle and penis, Hodgkin's disease, and malignant melanomata show a special tendency to metastasize to the adrenals. The dissemination occurs either through the lymphatic system or by way of the blood stream. As a rule the regional lymph nodes are the first involved. In advanced cases the thoracic duct is invaded but the chief channels for the dissemination of the sarcoma group of tumors are the blood vessels.

In the adrenals the medulla is the most common site of tumor invasion. Adrenal involvement is usually associated with widespread dissemination of tumor growth but in a few of the cases reviewed by the author metastases were found in the adrenals alone or in only the adrenals and one other organ.

Metastasis to the adrenals was found in 9 of 35 cases of carcinoma of the breast, 7 of 25 cases of carcinoma of the stomach, 3 of 33 cases of carcinoma of the oesophagus, 3 of 5 cases of carcinoma of the penis (in the majority of which the tumor was a squamous-cell epithelioma), 2 of 15 cases of carcinoma of the prostate, 2 of 5 cases of primary carcinoma of the lung, 2 cases of pigmented moles of the skin, 1 case of melanoma of the eye, 3 of 8 cases of tumor of the testicle, 2 of 5 cases of carcinoma of the thyroid, 1 of 4 cases of endothelioma, 3 cases of squamous-cell carcinoma of the vulva, 12 cases of carcinoma of the uterus, 1 of 3 cases of osteogenic sarcoma, 1 of 2 cases of tumor of the antrum, 1 of 17 cases of lymphosarcoma, 1 of 11 cases of carcinoma of the tongue, 1 of 13 cases of carcinoma of the bladder and 1 case of carcinoma of the pancreas.

Primary tumors of the adrenals are unusually rare. Of 46 000 patients admitted to the hospital a primary adrenal tumor was found in only 4. In 2 the neoplasm was in the cortex and in 2 in the medulla.

ELMER HESS, M D

Jacobs, A. Renal Tuberculosis. *Brit M J* 1934, I 450

The author reports on seventy cases of renal tuberculosis. The study of these cases included cystoscopic examination, an indigo-carmin test, ureteral catheterization with examination of the urine and pyelography. Several typical case histories are presented.

In 30 per cent of the cases the condition was clinically bilateral. In the unilateral cases nephrectomy was performed routinely even when occasional tubercle bacilli were found in the urine from the other kidney provided there was no destructive lesion in that kidney. The postoperative treatment

4. Shaving of mustaches and beards.

5. Cystoscopic examination of every employee once a year. Immediate cystoscopic examination when blood appears in the urine or bladder symptoms develop. In cases in which a bladder tumor is found cystoscopic examination every three months and periodically throughout the individual's life.

The symptoms suggestive of an aniline dye tumor are urinary disturbances such as frequency, dysuria and hematuria.

The pathological anatomy of aniline tumors of the bladder is essentially that of bladder tumors in persons not engaged in the dye industry. Non-epithelial neoplasms are very rare. Papillomata are usually single. Carcinomata are about twice as frequent as papillomata and are usually multiple. Although the tumors may invade the tissues of the pelvic cavity metastases are extremely rare. Single, multiple, papillary sessile, infiltrating, non-infiltrating ulcerating, non-ulcerating and combined forms may occur.

While the most marked changes appear in the trigone, the multiplicity of the tumors and the subsequent development of neoplasms in different sites leads to the belief that the toxic agent involves the entire bladder undoubtedly because of the carcinogenic substance circulating in the blood. The carcinogenic agent exerts its harmful effects in the terminal capillaries of the bladder mucosa. This theory is not entirely speculative as long ago Fenwick demonstrated that the majority of bladder tumors occurring in persons not engaged in the dye industry occur in the lower half of the bladder where the blood supply is much richer than in the vault. In cases of acute aniline dye poisoning the earliest lesion in the bladder is a proliferation of the capillaries in the basal layers of the mucous membrane. Later cancer develops in this area. Proliferation through the mucous membrane occurs late. The fact that these early lesions are not seen in cases of bladder tumor in persons not engaged in the dye industry merely emphasizes the relatively late period at which tumors of the bladder in persons not engaged in the dye industry are usually observed. Most Continental observers and the Wilmington dye workers are in accord that new tumors occurring in dye workers are not implants but new growths.

Gross and Simon are decidedly opposed to biopsy on aniline dye tumors because of the danger of multiple implants and recurrences.

A positive diagnosis of aniline tumor can be made only by early and periodic cystoscopic examinations. Precancerous signs revealed by cystoscopy are acute congestion, edema, and hemorrhagic areas. Persons in whom such signs are found should be re-examined every three to six months. In a series of 83 men cystoscoped in 1933 no tumors were seen, whereas when these men were re-examined a year later tumors were found in 6.

Simple tumors respond well to fulguration, while malignant tumors are not favorably influenced by such treatment.

The chief factor influencing the prognosis is the duration of the exposure to the dye. Termination of work in the dye plant does not lessen the possibility of future bladder growths, as aniline tumors have been known to occur as long as thirty five years after termination of the exposure.

MAURICE MELTZER, M.D.

Marion, G. Weltjandt, J. A., Walker K.: Surgery of the Neck of the Bladder. *Br J Urol* 1933
v. 351

MARION includes with diseases of the neck of the bladder the dysuric disturbances similar to those giving rise to hypertrophy of the prostate, disturbances caused by changes in the neck of the bladder which are not associated with visible lesions of the neck and are not attributable to nerve injuries.

The evolution and prognosis of disease of the neck of the bladder are identical with those of prostatic hypertrophy. The patient suffers all the complications arising from distention of the kidneys and bladder and all the septic complications that occur in association with prostatic hypertrophy.

Except for the symptoms which draw attention to the disease in the first place, the diagnosis is dependent almost entirely on negative findings. Exploration of the ureter reveals no sign of stricture, foreign body or calculi. On rectal examination the prostate is found normal. Urethroscopic examination shows the urethra to be free from inflammation and tumors. Roentgenographic examination reveals no abnormal findings whatever. The nervous system is apparently entirely normal. The positive symptoms indicating disease of the bladder neck must be known and carefully sought. In some cases there is resistance to the introduction of the sound into the proximal part of the posterior urethra. However it is chiefly cystoscopy which is of aid in the diagnosis. Cystoscopy shows the neck clearly visible at the back in the shape of a concave and more or less protruding pad, whereas the normal neck is completely invisible at the back.

Pathologic-anatomical investigations are of value only when they are carried out on the entire neck of the bladder rather than on fragments removed with the punch. On the basis of the findings the cases may be divided into the following three groups.

Group 1: The neck consists entirely of muscular fibers without glandular or inflammatory infiltrations.

Group 2: The muscular tissue is permeated by inflammatory or sclerotic elements which eventually lead to total fibrous transformation of the sphincter.

Group 3: In addition to inflammatory or sclerotic lesions there are glandular lesions formed by more or less abundant proliferation and showing a tendency toward adenomatous formations.

It is evident that there are two entirely distinct clinical types of disease of the neck of the bladder—a congenital and an acquired type.

The lesions of the acquired type consist of an inflammatory infiltration of the sphincter conducive

to more or less pronounced and sometimes even total muscular sclerosis. The inflammation may arise in the ureter or the prostate.

Lesions of the congenital type probably represent a hypertrophy which, according to some investigators, affects the muscles of the bladder neck and according to others affects all the elements of the neck but sometimes predominates in the muscles and sometimes in the glands. Another possibility is a defect in the opening of the sphincter during micturition which is responsible for the absence or deficiency of the muscular agent dilating the neck.

In order to eliminate the characteristic manifestations of these diseases operation must be performed on the neck itself. Medical treatment has proved unsatisfactory.

Three routes have been used to approach the neck: the transvesical, the perineal and the urethral. The perineal approach should be abandoned. As the neck of the bladder is a urethrovaginal organ it should be approached through the urethra or the bladder.

Of the transvesical operations, division (forced dilatation of the neck) has never produced any results. Section of the neck at the back or at some point in its circumference has yielded only incomplete results or has been followed by relapse. In some cases coniform excision of the neck has given good results, but in others it has failed. Hemorrhage may be prevented by a suture rejoining the apex of the urethral angle and the apex of the neck. Partial resection of the neck, which consists in removing fragments of the bladder neck with the fingers, forceps, or scissors, has been followed by both good and poor results. Total excision of the neck invariably gives perfect and lasting results. It is not a severe operation and has never been followed by incontinence. In cases of fibrous neck the removal is carried out by resection, but in the absence of very pronounced sclerosis it is done by enucleation.

Of the operations performed through the urethra resection of the neck with a punch has usually proved satisfactory from the standpoint of urination, but in some cases more or less important amounts of tissue are left. Moreover this operation is associated with danger of hemorrhage and infection.

Section of the neck which is carried out by means of curved blades heated with an electric current, gives far more satisfactory results. It is a less severe operation than resection. In most cases there is either no residue or an amount so slight that it is of no importance.

Destruction by electrocoagulation may be carried out either by urethroscopy with direct vision or by means of the Luy's direct vision urethroscope.

In cases in which it is necessary to operate on the bladder itself as for the removal of a diverticulum, an interurethral bar or an adenoma of the neck, the transvesical approach is indicated.

In operations performed by the transvesical route the neck should be removed completely as this is the procedure of choice and no more severe than partial

section or resection of the bladder neck. When the bladder must be opened this is the operation indicated. If section or partial resection only is desired, it can be carried out through the urethra.

In most cases the transvesical method is not imperative and if desired, the transurethral method may be used.

Transurethral operations are no more severe than transvesical operations and are followed by a quicker convalescence. While they are less certain in their results, a transvesical operation may be done later if a transurethral operation is unsuccessful.

When the transurethral method is employed punching is more satisfactory than destruction with Colling's or McCarthy's electrocautery or electrocoagulation by the Heitz Boyer method.

Marion prefers the transvesical operation as it permits total resection without increasing the danger to the patient and is the only operation insuring total removal of the bladder neck.

WRIGHTLAND states that among the local causes of the lesions of the bladder neck which lead to difficulty in urination are affections of the mucous membrane, submucous glands, sphincter internus and prostate. Indirect causes are conditions affecting the sphincter through the nervous system.

Disturbances in the evacuation of the bladder due to lesions of the bladder neck and prostate may be designated by the term prostatism. Their most common causes are (1) adenoma of the submucous periurethral glands (so-called prostatic hypertrophy), (2) carcinoma of these glands or of the prostate (so-called prostatic carcinoma) and (3) sclerotic processes fundamentally of an inflammatory nature.

In congenital hypertrophy of the sphincter (Marion's disease) the disturbances are due to the hypertrophy.

Therefore in principle there is no difference in the manner in which retention is caused in prostatic hypertrophy, prostatic carcinoma and the so-called prostatism sans prostate.

The various operative measures (prostatectomy, extirpation of the bladder neck, coniform excision, punch operations, electrocoagulation and resection with the cutting current) are the same in that the purpose of all of them is removal of a portion of the pathological tissue from the region of the bladder neck and sphincter. The results depend upon whether sufficient tissue is removed to allow what remains of the bladder neck and prostatic urethra to regain sufficient flexibility or to prevent interference with the function of the sphincter in the opening of the bladder neck.

The frequently successful result of transurethral treatment of prostatic hypertrophy by the method suggested by Caulk supports the theory that retention in the so-called hypertrophy of the prostate and the so-called prostatism sans prostate are due to one and the same cause.

Transurethral resection is gradually being substituted for the open operation. The three chief forms of transurethral treatment are

1. The use of Young's punch or one of the modified forms of Brausch and Bumpus, McCarthy Day or Phlip

2. The use of Caulk's cautery punch.

3. The cutting current resection methods (Stern Davis, McCarthy Canny Ryall, von Lichtenberg)

Reports with fuller details and based on larger series of cases will be necessary for sound judgment regarding the indications, performance, danger and efficiency of these procedures

WALKER first reviews the anatomy and physiology of the neck of the bladder and points out that surgery of the neck of the bladder is rendered more difficult by the fact that our knowledge of the anatomy and physiology of this part of the bladder is so incomplete. In his opinion, examination of the muscle fibers indicates that opening of the bladder neck is brought about not merely by relaxation of the sphincter but also by the dilating action of certain longitudinal fibers passing through this structure. Among other fibers with this action are those of the anterior bundle of the external longitudinal coat and those of the trigonal muscle. The latter has an additional action in flattening out the angle between the long axes of the bladder and the urethra. Walker applies the term *dyctasia*, previously introduced by Leguen, to all conditions in which there is some obstacle to the opening of the neck. He discusses the histology of bladder-neck obstruction with regard to (1) glandular hyperplasia, (2) muscular hypertrophy, (3) an increase of fibrous tissue, (4) an increase of more than one tissue, and (5) malignant disease.

The purpose of operative treatment is to remove all tissue interfering with normal opening of the neck. Walker discusses the various routes by which the neck may be approached—the perineal, the suprapubic, and the transurethral. He then discusses the operation of cuneiform excision of the posterior lip of the internal meatus and the more radical operation of complete excision. He reviews the history of transurethral operations and describes the instruments which are used in their performance. He states that modern transurethral methods are of three kinds: (1) simple fulguration, the coagulated tissue being left to slough away (2) electrocoagulation followed by immediate punching out of the coagulated tissue, and (3) removal of the obstructing tissue by means of the McCarthy loop. Since according to his experience, sepsis is a grave danger in all cases in which coagulated tissue is left behind, he prefers operations which include immediate removal of the coagulated tissue. This is best accomplished by the use of the McCarthy loop, which removes tissue at the same time that it seals off the bleeding points.

The article ends with a discussion of anesthesia, the mortality of transurethral operations, and the choice of operation. Since the purpose of surgery is to remove enough tissue to restore the ability of the bladder neck to dilate, a transurethral operation should be done only when, in the opinion of the surgeon, this purpose can be realized by such a proce-

dure. When surrounding structures are extensively involved, as in cases of fibrous bar associated with a fibrous prostate, the more radical operation of excision of the neck will probably be necessary.

C. TRAVERS STEET, M.D.

GENITAL ORGANS

De la Peña A.: The Present Status of Transurethral Surgery in Prostatic Diseases (Der gegenwertige Stand der Transurethralchirurgie der Prostaterkrankungen) *Ztschr. f. urol. Chir.* 1933, xxxiii, 251

The transurethral treatment leading to permanent results in the prostatism associated with prostatic hypertrophy or sclerosis of the neck of the bladder is not entirely free from danger but has many advantages. An instrument for satisfactory endoscopic treatment of the stenosing changes in the neck of the bladder must meet three basic requirements:

1. By means of a good optical arrangement it must permit exact estimation of the amount of tissue to be removed in order that the use of the method may be avoided in cases in which other methods of prostatectomy should be employed.

2. It must be capable of removing sufficient tissue, for if the obstruction is not completely relieved the remaining portions of tissue nourished by the blood vessels may cause persistence of the symptoms and even increase their severity.

3. It must permit complete haemostasis after completion of the resection.

The technique of the method is described in detail. In so-called prostatic hypertrophy transurethral resection has without doubt yielded good results in many cases. However, definite judgment of it will be possible only after it has been used many years. It relieves the disturbances of micturition caused by malignant neoplasms of the prostate, tubercles, and myelitis, and spares the patient the dangers and inconveniences of daily catheterization. Because of its low mortality, the rarity of complications, and the avoidance of disturbance of genital function, transurethral resection permits operation on young men with prostatic disease and reduces the number of cases in which other methods of prostatectomy must be used.

ZWERN (2)

MISCELLANEOUS

Helmholz, H. F.: Experimental Studies in Urinary Infections of the Bacillary Type. *J. Urol.* 1934, xlv, 173.

After complete obstruction of the ureter in urinary infections the infection spreads rapidly through the kidney. When the bacillus is virulent the kidney is thoroughly infiltrated with exudate in from forty-eight to seventy-two hours. At the end of that time it is impossible to determine the channel by which the infection passed from the pelvis to the kidney. The evidence suggests that it spread by vascular

and perivascular routes rather than by ascent through the tubules. In ascending infection the danger of vascular involvement is much greater than has been appreciated heretofore.

In experiments on rabbits it appeared that the infection of the urinary tract by organisms resembling the bacillus coli began in the bladder and ascended to the renal pelvis and parenchyma.

The evidence indicating an ascending route of infection in the bacillary pyuria of childhood is (1) the greater frequency after the first two weeks of life, of infection by colon bacilli in females and of colon bacillus bacilluria in females during attacks of gastro-enteritis (2) the equal incidence of these conditions in both sexes during the neonatal period, when colon bacillus bacteremia is known to occur. During the course of bacilluria, colon bacilli do not tend to produce renal lesions. Observations on animals strongly suggest the occurrence of a form of pyelitis limited to the renal pelvis both pathologically and clinically which is due to an infection ascending from the bladder.

Under proper control methenamine is one of the most valuable of urinary antiseptics. Comparative studies have shown it to be successful after other antiseptics have failed. The most important element in treatment with methenamine is acidification of the urine to a point at which acidity alone may aid in inhibiting bacterial growth. At a hydrogen-ion concentration of from 5.5 to 4.9 smaller doses of this drug seem to sterilize the urine. With strong acidification of the urine it has been possible to use methenamine successfully in the acute pyelitis of early infancy a condition in which little success was formerly expected.

As the urine of patients on a ketogenic diet often shows bactericidal powers, it is evident that acidity of the urine is not alone responsible for this power. A ketonurine with a hydrogen-ion concentration of 5.6 was found to have a marked bactericidal power whereas normal urine with a hydrogen-ion concentration of 4.8 was not bactericidal. Urine adjusted to a hydrogen-ion concentration of 4.6, 4.4 and 4.2 had bactericidal power against certain organisms. No urine with a hydrogen ion concentration of more than 5.6 when passed was found to be bactericidal but urines which became alkaline on standing remained bactericidal. Urines which lost the bactericidal property with increasing alkalinity again became bactericidal when the hydrogen ion concentration was reduced to the original level. Most urines when alkalinized to a hydrogen ion concentration of 5.8 or more lost their bactericidal power.

The concentration of the bactericidal substance is well seen in dilution. Bactericidal ketonurine diluted 1:1 and 1:2 still remains bacteriostatic but the author has examined no ketonurine which did not lose its bacteriostatic power when diluted 1:3.

Beta hydroxybutyric acid even in its racemic form, may have a bacteriostatic action. In some urines this action was found to be proportional to the content of hydroxybutyric acid.

The ketogenic diet offers a means of rendering the urine bactericidal and thereby sterilizing the urinary tract even in the presence of stasis. However even in cases of intense ketosis and a low hydrogen-ion concentration, the bactericidal power of the urine tends to disappear after ten days. The more rapid the production of ketosis the better the bactericidal action.

LOUIS NEWZLY M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Jones, R. W. and Roberts, R. E.: Calcification, Decalcification and Ossification. *Brit J Surg* 1934, xxi, 461

Bone formation has been considered a specific activity of osteoblasts despite the fact that it may occur in tissues distant from sources of osteoblasts. The association of decalcification with hyperemia of infection has been accepted but as the decalcification leading to non-union after fracture of the neck of the femur has been attributed to impairment of the blood supply identical changes have been attributed to opposite processes.

The osteoblast can no longer be regarded as a cell endowed with the specific power of laying down bone. It is merely the cell of a mesenchymatous tissue in which inorganic salts may be deposited, absorbed, redeposited, and re-absorbed according to the local influence of enzymes and under the general control of endocrines. This is not a property peculiar to bone cells. A similar power to effect the deposition of inorganic salts is possessed at certain stages of development by the cells of cartilage and of fibrous tissue. The bone cell of Purkinje is a quiescent fibroblast imprisoned in bone. The osteoblast is a fibroblast enlarged because of activity. Normal and pathological changes are demonstrated by variations from one type to another such as: (1) dedifferentiation of bone to fibrous tissue in hyperparathyroidism; (2) dedifferentiation of fibrous tissue of tendons and muscles into bone in myositis ossificans progressiva; (3) a change from cartilage into bone in epiphyseal disks; and (4) ossification of the semilunar cartilages of the knee.

Calcification is dependent on phosphatase activity which is controlled by the hydrogen-ion concentration of the tissue fluids, and this in turn is probably determined by local conditions and the content of calcium in the blood. There is a definite balance between calcification and vascularity. Pathological calcification occurs in tissues in which the metabolism is normally low such as the avascular caseous masses of old tuberculous and syphilitic disease, tendons and ligaments, costal and semilunar cartilages, and the falx cerebri. Even in such relatively avascular tissues the deposition of calcium is usually the result of a still further reduction in the metabolic rate by fibrosis following trauma or infection.

The association between impaired vascularity, phosphatase activity, and calcification is reversible. Tissues may be calcified, decalcified, and recalcified by alternately decreasing the circulation by the influence of the roentgen rays and allowing it to increase by stopping the roentgen treatment.

When the blood supply to a bone is decreased the bone undergoes increased calcification, as in syphilitic osteitis, in which there is an endarteritis obliterans and the characteristic bone change is one of increased calcification or sclerosis. Similar changes are found in the reparative stages of osteomyelitis. When the blood supply to a bone is increased by infection or by trauma with the liberation of histamine or acetylcholine decalcification occurs.

The article includes roentgenograms showing the relation between vascularity and decalcification and avascularity and calcification in pathological and normal calcareous deposits.

In discussing the clinical significance of the hyperemic decalcification of bone shown in delayed union or non-union of fractures, in bone transplants, and in Kienmell's disease of the spine, the authors state that benefit may be derived from reduction of the hyperemia. Non-union of fractures may be caused by hyperemia resulting from the shearing and twisting of improperly immobilized parts. Obviously therefore proper immobilization is indicated. In compound fractures which fail to heal, infection may be an additional cause of hyperemia. The infection should be treated by complete immobilization as by the Orr method of treating compound fractures and infections of bones.

The authors maintain that a bone transplant never enters the circulation of the host. A bone-grafting operation facilitates union of fractures because:

1. The preparation of the bed of the graft breaks down the barrier of sclerosed bone and permits revascularization and mobilization of calcium salts.
2. The graft itself increases the local excess of calcium.
3. Accurate fitting of the graft in its bed assists in proper fixation.

Avascularity with calcification is found also in metastatic malignant disease of bone, fragility of calcified bone, Kienboeck's disease, Preiser's disease, Koehler's disease, and Freiberg's disease.

The difference in the degree of calcification of sarcomata and of secondary deposits of carcinomata is definitely related to the degree of vascularity. In certain stages of Paget's disease, syphilitic osteitis with obliterating endarteritis, and Albers-Schoenberg's disease, spontaneous fractures occur because of fragility of densely calcified avascular bone.

When the periosteum is elevated by a subperiosteal hematoma, bone is found within the new limits of the periosteum. Subperiosteal ossification may be found in avascular muscles in the elbow, knee, ankle, and shoulder. In certain injuries of the semilunar cartilages calcification may be confused with loose bodies in the knee joint.

ROBERT S. RICK, M.D.

Kay, H D Simpson, S L., Riddoch G and Vilvandre G E: Osteitis Deformans. *Arch Int Med.*, 1934 *l*iii, 205

The authors report thirty four cases of osteitis deformans or Paget's disease. Eighteen of the patients were females. The ages of the patients ranged from thirty nine to seventy-eight years and averaged fifty five years. In one instance a brother and sister and possibly their mother had osteitis deformans.

The condition is usually insidious in its onset and may be present for many years without being detected. In ten of the cases reported the first symptom was pain in the lower limbs in two pain in the back and in two headache. In four attention was first called to the disease by the occurrence of a pathological fracture, and in eight the disease was discovered when the patient was admitted to the hospital for some other condition.

Twenty four of the thirty four patients suffered pain. The pain was usually in the back and lower limbs. Eight patients complained of severe headache. The headache occurred in various regions of the skull. The pain in the long bones has been attributed by Elliot to distention of the periosteum. In some of the cases reviewed it was definitely associated with the change in the shape of the bones and the development of new axes of strain and stress. The changes in the shape of the bones are due to softening and their degree and direction are influenced by gravity and muscular tension. In three of the cases reviewed bowing of the legs was so extreme that walking was impossible. In the classical case there is enlargement of the skull but this does not always occur and was absent in eight of the thirty four cases reviewed. Arthritis was present in three cases but was probably associated with changes due to age. Sarcoma of the femur developed in one case. In a review of the literature Packard Steele, and Kirkbride found that sarcoma developed in five of sixty seven cases.

Two of the patients whose cases are reported by the authors suffered from spastic paraplegia caused by spinal compression due to deformed vertebrae and associated with incontinence of urine and sensory disturbances. Seven patients had evidence of nervous lesions attributable to spinal compression or vascular changes, such as senile epilepsy lateral nystagmus with diplopia, and polyuria. Mental abnormality was noted in two patients but was not attributed to changes in the shape or growth of the skull.

Arterial degeneration is common in osteitis deformans. Arteriosclerosis was found in nineteen of the patients whose cases are reported by the authors. In nineteen it was severe in six moderate and in four slight. The authors believe that while it may occur more often in persons with osteitis deformans than in others of similar age, there is not sufficient evidence to warrant the theory that toxins or abnormal calcium metabolism is the direct cause of the arterial degeneration.

Two of the patients whose cases are reported showed optic atrophy and two had diplopia and nystagmus. Hemorrhage of the fundus, keratitis, and subretinal hemorrhage occurred in one case each. The authors believe that the ophthalmic changes in osteitis deformans are probably caused by bony compression of the optic or oculomotor nerves or by retinal arteriosclerosis.

Gross impairment of hearing was present in ten cases. In nine, it was due to chronic disease of the middle ear and in one to bilateral otosclerosis.

Studies of the chemical composition of the bones in osteitis deformans have revealed an increase in the percentage of organic matter and a decrease in the mineral matter that is, a decrease in calcium and magnesium.

In the blood, the calcium and phosphorus are approximately normal, whereas in generalised osteitis fibrosa the serum calcium is almost invariably above normal and the plasma phosphorus is below normal. In osteitis deformans there is a striking increase in the phosphatase activity in the plasma. In all of the cases reviewed the plasma phosphatase was much above the normal and in the majority it was more than ten times the normal. The high plasma phosphatase has not been diminished by treatment although this has been accomplished in osteitis fibrosa and osteomalacia.

A study of the mineral metabolism in osteitis deformans showed retention of calcium, magnesium, and phosphorus and a loss of sulphur due to calcification of the newly formed matrix with loss of sulphur from the matrix.

In discussing the various theories as to the cause of osteitis deformans the authors state that the theories attributing the condition to syphilis and neurophic factors are without foundation. It is believed that the possible phases of parathyroid activity may be secondary to bony changes of unknown origin. At present there is insufficient evidence to prove that the disease is caused by a disturbance of the function of a ductless gland, inflammation, or a combination of these factors.

Röntgen examination in the typical case shows a cotton wool appearance of the involved bones and rarefaction adjacent to increased density. Röntgen examination often reveals the disease when there are no clinical symptoms.

Osteitis deformans must be differentiated from metastatic prostatic carcinoma and osteitis fibrosa.

RUDOLPH S REICH M D

Marxiani R. The Generalized Osteochondrodys-trophies of Growth (Sur les osteochondrodys-trophies systématisées de la croissance) *Arch française de chir.* 1933-34 xxxiv 22

A number of related diseases characterized by changes of all of the endochondral bones or of the epiphyseal portions of the long bones have been described. To date, no comparative studies have been made of these diseases and they are designated in the literature by a variety of names such as

"osteoarthritis deformans endemica (Welfaminow) Kashin-Beck disease," "congenital and hereditary generalized osseous dystrophy (Léri) "pleonostosis (Léri) "familial osseous dystrophy (Marquis) "spongy generalized dystrophy (Grudisnaki) "generalized osteochondritis" (Wright) "dwarfism due to disturbance of epiphyseal development" (Ruggles) and "dwarfism from disturbance of endochondral ossification" (Campbell)

Kashin Beck disease was described in 1861 by Kashin as a form of endemic gout and arthritis, and by Beck in 1906 as an endemic arthritis. It is characterized by symmetrical polyarthritic deformities of the extremities. Ordinarily it appears insidiously in children at about the fifth year of age and runs a course of from eight to ten years. It may be painless or associated with rheumatic symptoms. Gout may be present. The condition causes limitation of the movements of the joints and deformities such as kyphosis, lordosis, genu valgum, and coxa vara.

The pleonostosis described by Léri in 1922 is a generalized familial dystrophy affecting the skeleton as a whole, but especially the long bones. It was first seen in a man thirty five years old and his two children who were respectively four years and three weeks old. In the children the changes were slight. There was symmetrical involvement of the hands, elbows, feet, knees, and hips. Movements were limited, and there were deformities. The deformities included short square hands with flexed fingers and partial ankylosis of the proximal and middle joints. The wrists were large and showed only slight movements of flexion and extension. Lateral movements were abolished. The forearms were in pronation and the humeri in internal rotation. Abduction of the arms was limited. The feet were short and thick and in varus and cavus. Flexion and extension were markedly reduced, as were movements of the toes. Abduction of the thighs was impossible, the hips permitting only slight flexion and extension. The vertebral column was relatively stiff, and the back was flat. The nose was of saddle shape, and the distance between the eyes was increased. The borders of the lower lids formed a straight line. The cases reported by others closely resembled those reported by Léri.

In a study of the roentgen signs, Goldstein and Niluforow found alternate zones of rarefaction and sclerosis with lipping of the articular borders and vertebral bodies, widening of the interarticular spaces, and retardation of endochondral ossification. Léri called the condition "pleonostosis" because of the premature ossification, enlargement of the epiphyses, and destruction of the joint cartilages. Wright described alterations which resembled those of the various osteomalacias such as Calvé-Leggs-Perthes disease, Koehler's disease, and Klenbrock's disease. The vertebral bodies are flat and broad, a change that has given rise to the name "generalized platyspondylitis" (Lance, Denis, Weil).

Pathological studies have shown that enlargement and irregularity of the epiphyseal cartilages

are already present in the fetus. At the age of one year the epiphysis is excessively vascular and irregular and there are zones of osteoporosis and small subperiosteal hemorrhages. At a more advanced age a uniform osteoporosis of the diaphysis is found.

With regard to the etiology of the disease little is known. The condition has been attributed to endocrine, dietary toxic, and hereditary factors.

The author reports seven cases in detail with photographs and roentgenograms.

ALBERT F. DE GROOT, M.D.

Freedman, E.: The Behavior of the Intervertebral Disk in Certain Spine Lesions. *Radiology* 1934, xxii, 219.

The intervertebral disk is a cartilage which acts as a bumper between the vertebrae. In its center is a watery fibrous mass called the "nucleus pulposus" which renders the disk more resilient. The ratio of the thickness of the disk to the thickness of the vertebral body is about 1:3 in the thoracic region and about 1:3 in the lumbar region.

It is questionable whether the disk can be the primary site of disease. However this may be possible in younger persons in whom the disks have intrinsic blood vessels. Many clinicians regard a narrowing of a disk as a sign of tuberculosis, and it has been generally believed that in tuberculous spondylitis complete obliteration of the joint space without bone production occurs whereas in non-tuberculous disease there is new bone growth and no diminution in the joint space. Recently, however this theory has been questioned. The author as well as others, has seen proved cases of tuberculosis in which the joint space and intervertebral disk seemed to be of normal thickness. This may have been due to the fact that the patient was constantly recumbent or possibly to the pressure of an intervertebral and paravertebral abscess. In one case there was complete collapse of the third lumbar vertebra with a normal joint space on either side and no change in the contour of the spine. The diagnosis made on the basis of the roentgen findings was metastatic tumor but at autopsy typical tuberculous tissue containing tubercle bacilli was found. In another case, in which the roentgenograms showed the picture typical of spondylitis deformans with bony bridges and joint spaces of normal width, autopsy showed the condition to be tuberculous. In a third case, bone production, normal joint spaces, and tubercle bacilli were found.

In a case of carcinoma of a vertebra secondary to a carcinoma of the thyroid the intervertebral disk and space were obliterated and there was a kyphosis simulating tuberculosis, and in a case of vertebral carcinoma secondary to carcinoma of the breast the spaces between the several vertebrae were narrowed.

In typhoid spine the disk may become opaque and thin after a few weeks. The author cites a case in which examination revealed pronounced scoliosis, irregular necrosis of the vertebral bodies next to the narrowed disks, and a temperature of from 99 to 100 degrees C. About six weeks later there was very

evident new bone formation which developed into bridges causing ankylosis between two vertebrae. The disk, however, remained narrow.

In osteomyelitis and other infectious forms of arthritis of the spine the disk may remain intact or may be destroyed. In cases in which it is destroyed and the adjacent vertebrae are necrotic the lesion may be mistaken for tuberculosis.

WILLIAM ARTHUR CLARK, M.D.

Hayek, W: Talonavicular Synostosis (Synostosis talonavicularis). *Ztschr f orthop Chir* 1933 12, 151

In the literature the author found the reports of four cases of talonavicular synostosis. Three of the patients and the patient whose case is reported by the author were males. In Holland's case the talus which was completely fused with the navicular bone showed a distinct line of demarcation in its upper portion. In Blencke's case, there were, in addition to fusion of the talus and navicular bone in the talonavicular articulation, two remnants of the obliterated articular cartilage the size of caraway seeds. The *tuberositas ossis navicularis* protruding markedly on each side indicated synostoses with the *ossa tibiae* during the period when the latter were still in the germinal stage. In Esau's case there was a synostosis between the talus navicular bone and the first cuneiform bone, two toes were missing and in the skeleton of the left foot which was otherwise normal, one toe was missing. In the case reported by Illeritz, the fifth ray was missing as was also a navicular as a separate bone only one metatarsal bone articulated with the cuboid bone the head of the talus, besides projecting markedly showed condensation of the bony structure in its medial portion and shortening of the right foot by the width of the navicular bone suggested complete absence of that bone.

The author's case was that of a ten year-old boy with symptoms of depressed arch which were relieved by a flat foot insert with inner heel wedges. The left foot had six well-developed toes, the second of which was pressed slightly dorsad by the first and third. Roentgen examination of the left foot showed marked lowering of the longitudinal arch complete bony ankylosis between the talus and navicular bone longitudinal shortening of the second cuneiform, widening of the third cuneiform bone duplication of the second metatarsal bone which had free rays in half of its course and proximally a common shaft of twice the normal width with a similar base and adduction of the terminal phalanx of the left hallux.

The patient's father a syphilitic, was in the hospital for a long time after his marriage for treatment of polyarthritis, particularly of the ankles, blepharocconjunctivitis, and hypertrophy of the parotid glands. His Wassermann reaction was strongly positive and did not become negative until after the third course of treatment. He had four courses of treatment. He showed a tendency to de-

velop eczema and had adherent ear lobes. His feet were normal externally but roentgen examination disclosed in both of them complete bony ankylosis between the first metatarsal and the first cuneiform bones and apparently also of the other metatarsals and the first row of the tarsals. The remaining tarsal bones, particularly the tali, and especially the left talus, were slightly deformed. On each side the *os tibiae externa* was divided into at least two portions. *Hallux valgus* was present and more marked on the right than on the left side. Both of the first metatarsal bones showed an exostosis the size of a kernel of rice on the distal and fibular side. In the base of the first metatarsal bone there was an island of compact bone.

The Wassermann reactions of the mother and the other children were negative. The sister of the patient was normal. The grandfather who probably had acquired syphilis and the great-grandfather on the paternal side were alcoholics. The great-grandmother probably an arthritic, died young of pulmonary tuberculosis. The grandmother a Polish woman who was said to have adherent ear lobes, was healthy. The brother of the grandfather died of pulmonary tuberculosis at the age of thirty-seven years. His child was healthy. The second brother an alcohol addict, lost his life in an accident. The third who was still living, had been operated on for glaucoma. One brother of the father died at the age of one year of congenital syphilis another at the age of twenty two years of pulmonary tuberculosis and a third, at the age of two years, of convulsions. The three other children of the father's parents were healthy and had healthy offspring and negative Wassermann reactions. There was a history of two abortions and one stillbirth. The picture was that of an alternating syphilitic heredity.

On the maternal side the great-grandfather was an alcoholic, the grandfather died of war wounds and the grandmother died of miliary tuberculosis. The mother was healthy. Roentgen examination of her feet showed deformity of the second and third cuneiform bones as though from lateral compression, and marked protrusion of the navicular bone.

The structure of the complete talonavicular synostosis described by the author does not permit the assumption that it originated from at least two centers of ossification. Both feet were of the same length and the length of the combined talus was the same as that of the talus and navicular bone of the other side. For the islands observed by Blencke in the structure of the combined talus the author rejects the term 'articular cartilage.' Since, according to Kollmann the fissure between the navicular bone and the talus appears between the eighth and ninth week of embryonic life, it might be a matter of different connective tissue or this might have broken down. Under such conditions the term 'cyst,' which Blencke rejects, would be suitable. Even by extreme planter flexion from the middle of the foot the author was unable to cause gaping of the articular

space as Blencke did in the case of his twenty-six year-old patient. He suggests that possibly the tendon apparatus was not yet sufficiently loosened.

The fungus associated with the talonavicular synostosis in Holland's case and in the father of the author's patient suggest that the cause, as also for the polydactylia, was an injury to the germ. Hayek believes that in his case the noxa was the alcoholism in both the maternal and the paternal lines. Added to this was the congenital syphilis of the father in whom the synostoses first appeared. As the patient was seronegative, an inflammatory injury dependent on congenital syphilis could be excluded. Such an injury has not yet been recognized in the third generation with a positive Wassermann reaction. Without doubt the case was not one of absence of the navicular bone, but one of fusion of the anlagen of the talus with the navicular bone. Such fusion can occur also with other and several bony anlagen and may remain unrecognized if flat foot pains do not occur. The noxa causing the injury to the germ may be syphilis, alcohol or general degeneration in the ancestral line. EWELL (Z)

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Meier F: Results of Meniscectomy. Follow-Up Examinations of Patients Subjected to Meniscectomy at the Canton Hospital in Aarau in the Period from 1929 to 1931 (Resultate nach Meniscektomien. Nachuntersuchungen der in der kantonalen Krankenanstalt in Aarau in den Jahren 1929-1931 meniscektomierten Patienten). *Schweizer med. Wochenschr.* 1933, 9, 1019, 990.

From the same hospital, Patry Remy in 1930, reported the results of follow-up examinations of patients subjected to meniscectomy in the period from 1911 to 1926. The results reported in this article are comparable with those of Patry Remy as in Meier's investigation exactly the same outline was used for the questionnaire and the follow-up examination. However Meier's work went farther than that of Patry Remy as it included an investigation of the value of Bircher's procedure of simultaneous excision of Hoffa's fatty mass with the meniscectomy. This investigation was undertaken because meniscal lesions include lesions of the synovialis and of Hoffa's fatty body which, by chronic inflammation, may lead to pain disturbances of movement, and even phenomena of incarceration after removal of the meniscus.

Meniscosynovitis is probably related to osteochondritis deformans. Laeven and Payr agree with Bircher in recommending removal of the plica synovialis to obtain better operative results. In 1929, Bircher reported that synovitis could be demonstrated in 62 per cent of cases in which six weeks had elapsed between the trauma and operation and in 83 per cent of those in which the interval was longer than a year. From this fact he concluded that, to improve the late results, operation must be

performed early. Bircher now inspects Hoffa's fatty mass at every meniscectomy and removes it routinely if he finds it macroscopically changed.

Meier emphasizes that his statistics include only uncomplicated meniscal injuries. Internal injuries complicated by involvement of the crucial and lateral ligaments are not considered. In the period from 1929 to 1931 213 meniscectomies were done. Questionnaires were answered by 146 (70 per cent) of the patients. Ninety-eight of these patients were re-examined. In the tabulated statistics these 146 cases are used, but in some instances separate data are given as the answers to the questionnaire and the findings of re-examination did not agree. The hope of compensation had an important influence on the answers regarding complaints, leading frequently to exaggeration.

Four types of results are recognized: (1) perfect, i.e. patient entirely free from symptoms and functionally fit; (2) good, i.e. patient not free from symptoms, but with 100 per cent capacity for work; (3) moderate, i.e. patient complaining of constant pain and showing some limitation of function objectively (these persons were receiving insurance); and (4) poor, i.e. marked stiffness in the knee.

In no case in which a re-examination was made either by Patry Remy or by Meier were the results of the fourth type. The results of both series of follow-up examinations were in practical agreement. A perfect result was found by Patry Remy in 71.4 per cent of the cases and by Meier in 72.4 per cent, and a good result by Patry Remy in 28.6 per cent and by Meier in 27.6 per cent. No patient was obliged to change his occupation even though in 8 of those with good results small pathological changes were demonstrable. The results were better in younger than in older patients. Of the younger patients, Patry Remy found a perfect result in 75 per cent and a good result in 25 per cent, and of the older patients, a perfect result in 59 per cent and a good result in 41 per cent. Meier found a perfect result in 72 per cent and a good result in 28 per cent of the younger patients, and a perfect result in 64 per cent and a good result in 36 per cent of the older patients. Sex exerted no influence. On the other hand, the interval between the operation and the follow-up examination was of importance. The results became better with time. Therefore the surgeon is justified in assuring the patient who at first complains of symptoms that these will disappear in the course of time, probably by the end of a year.

The results after removal of the lateral meniscus (by Patry Remy in 15 per cent and by Meier in 7 per cent) were equally good. Of great importance was the relation of the result to the interval between the trauma and the operation. Persons operated on early had better results than those operated on after months or years. On this point Meier's statistics differ from those of Patry Remy. Patry Remy found the results 10 per cent better in patients who were operated on after one year. This was attributed to the fact that there were 6 per cent more

young persons in the group operated on late and young persons have a better healing tendency and a stronger will to get well than older persons. Meier found perfect results in 74 per cent and good results in 26 per cent of the cases in which the interval was up to six weeks perfect results in 67 per cent and good results in 33 per cent of those in which the interval was between six weeks and one year and perfect results in 63 per cent and good results in 37 per cent of those in which the interval was longer than one year. He sees the explanation in the routine removal of Hoffa's fatty body when it showed macroscopic change. Of the first group (Interval up to six weeks) synovitis was found in 60 per cent of the second group in 77 per cent and of the third group, in 82 per cent. However according to Rost's experiments on animals, the synovialis recovers more rapidly than the fatty body and therefore excision of the latter is absolutely necessary.

Complete postoperative disability for work averaged forty-eight days and 50 per cent disability averaged twenty three days. Whereas Patry Remxy found perfect healing in 72 per cent of insured patients and 60 per cent of uninsured patients, Meier found perfect healing in 68 per cent of insured patients and in 87 per cent of those not insured. Without doubt, insurance was a factor in these percentages, but it must be borne in mind that there was a greater number of young persons among the non insured.

With regard to functional ability after the meniscectomy Meier states that all of the patients, the majority of whom were doing heavy work, remained in their previous occupation. Of Patry Remxy's 257 patients, 2 were obliged to choose

lighter occupations. Only 2 of Meier's patients were drawing permanent compensation (10 and 5 per cent respectively) at the time of the follow up examination. Fifteen received temporary compensation of from 10 to 25 per cent for from six to twelve months. Forty-one patients were called for military service. Nine were excused from serving, apparently as a precautionary measure although the result was good in 3 and perfect in 6. Of 43 persons addicted to sports only 4 had given up sports. In no case were there postoperative phenomena of incarceration due to overlooked tears in the posterior parts of the meniscus or portions left there purposely.

Bircher's clinic therefore continues to advocate the parapatellar incision and to maintain that only the injured portions of the meniscus need be removed and total extirpation is not necessary. Under all conditions care must be taken to avoid dividing the lateral ligaments. A slight degree of instability was seen in only 3 of the cases reviewed. Drawer symptoms were never observed. In all of the 98 cases in which the patient was re-examined roentgenograms on both sides were made, and in 55 cases pneumoroentgenography was done on the knee subjected to operation. Pneumoroentgenography has great advantages as it shows the meniscus clearly and the shape and size of Hoffa's fatty body, the recess and the bursa. By this procedure it is possible also to ascertain the state of regeneration of the meniscus. Among the 55 cases there were only 5 which showed no regeneration all those of older patients.

The article contains roentgenograms. In conclusion the author states that meniscectomy does not cause arthritis deformans.

FRANZ (2)

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Pannaghi, R.: The Genesis of Post Traumatic Arteriovenous Aneurisms. A Clinical and Experimental Contribution (Sulla genesi post traumatica di aneurismi arterio venosi. Contributo clinico e sperimentale) *Chir chir* 1933 17, 1044

The author reports a case of late post-traumatic arteriovenous aneurism of the superficial femoral vessels and a series of attempts to produce arteriovenous aneurisms in animals. From the results of the experiments he concludes that for the production of an arteriovenous aneurism a simple traumatic lesion must be supplemented by infection or a lesion of the vessel walls. P F MIMURA, M D

Costa, D and Mariotti, D.: Systematic Histological Studies of the Changes in the Arteries and Veins of the Viscera and Limbs of Persons Affected with Syphilitic Aortitis (Ricerche anatomiche sistematiche sulle alterazioni della arterie e della vene viscerali e degli arti in individui affetti da aortite luetica) *Sperimentale* 1933 LXXVII, 501

The authors sectioned several arteries and veins in thirty-one proved cases of syphilitic aortitis. Besides the aorta, each artery and vein was examined at more than one level, especially if the findings were negative. The carotid, coronary and cerebral arteries and the arteries of the lower limbs were most frequently affected with lesions similar to the aortitis. In subjects of advanced age the coronary and cerebral arteries, but especially the carotid arteries, were particularly diseased, whereas in the younger subjects the arteries of the lower limbs were involved more frequently. P F MIMURA, M D

BLOOD; TRANSFUSION

Melner, K.: The Blood Properties M and N (Die Blutgesamtheiten M und N) *Monatsh W'chensch* 1934 1 23

In addition to the blood groups A, B and O which are now generally recognized, there are other properties of blood which permit a more exact differentiation of the old blood groups. These also depend on agglutinins which are obtained by immunisation of rabbits with blood of Group A or B. From the serum so obtained the agglutinin directed against the human cell is removed by its union with blood corpuscles of Group O. By further investigation of these very complicated phenomena, Langstefner and Levine were able to distinguish two properties, which they designated by the letters "M" and "N". These two properties are so closely related that both are never absent. However as either M or N may be absent, three sub groups can be recognized. The technique of the investigation is explained.

In studies of the blood with regard to M and N which the author has carried out over a period of years, he has established the heredity of these properties. Altogether he has made about 30,000 determinations. He found that in the proof of parentage these determinations may give more accurate results than the usual blood-group determination.

ROSE (Z)

Barlik, A.: The Nature of Delayed Blood Clotting in Icterus Due to Stasis (Ueber das Wesen der verzoegerten Blutgerinnung beim Stauungsikterus) *Arch f klin Chir.*, 1933 LIVII 252

The cause of the delay of blood clotting in icterus due to stasis has not yet been satisfactorily proved. Flooding of the body with the constituents of bile cannot be the cause as implantation of the common duct into the inferior vena cava produces no change in clotting (Widdegans).

Since, theoretically delay of blood clotting may be caused by (1) deficient formation of thrombin, (2) a lack of fibrinogen, and (3) the presence of substances which inhibit the action of thrombin on its substratum, it was necessary to study all of these factors. A deficiency of fibrinogen can be ruled out as blood from icteric patients clots readily when substances which stimulate clotting are added to it. Deficient thrombin formation may be due to (1) a deficiency of calcium ions, (2) a deficiency of prothrombin, (3) a deficiency of cytozym, or (4) an excess of antiprothrombin. There is no deficiency of calcium ions or prothrombin, and no absolute deficiency of cytozym. However a relative deficiency of cytozym and an excess of antiprothrombin were suggested by previous studies.

The author's studies were carried out on rabbits in which the common bile duct was ligated. In the determination of the antiprothrombin content of the blood, the blood was examined for the following factors which are characteristics of antithrombin alone: (1) antiprothrombin power (2) antithrombin power (3) a strongly complementary reaction against weakly sensitized blood corpuscles, (4) a weakly anticomplementary reaction against markedly sensitized blood corpuscles (5) thermostability when heated to 56 degrees and (6) thermostability when heated to 70 degrees. In some cases determinations were made of the thrombin content of cholemic sera and its complementary powers, the resistance of the morphological constituents of the blood and the possibility of inactivating the factors which inhibit coagulation of the blood by the addition of chloroform, acidification and perfusion with carbon dioxide.

The findings of these extensive studies indicated that in icterus due to stasis a substance correspond-

ing to antiprothrombin appears in the blood. This is evidenced by the following facts:

The plasma of an animal with a ligated common duct possesses antithrombic, antiprothrombic and anticomplementary properties. When a cholemic serum is heated to 56 degrees it possesses more marked antiprothrombic properties than normal serum similarly treated. When it is heated to 70 degrees the antiprothrombic property is lost. The action of prothrombin is reversibly inhibited by cholemic plasma. By acidification the addition of chloroform, and perfusion with carbon dioxide the coagulability of cholemic blood and plasma is increased. The morphological constituents of cholemic blood exhibit an increased resistance. As compared with the antiprothrombin the other constituents of cholemic blood which have some influence on the course of coagulation are of much less importance.

The increase of antiprothrombin in cholemic blood is attributed by the author to an injury of the liver which regulates the antiprothrombin content of the blood. It is possible also that the extrahepatic formation of antiprothrombin is increased.

With regard to treatment no definite conclusions may yet be drawn from these observations. It is unknown where the antiprothrombin is formed in the body. Irradiation of the spleen seems to influence antiprothrombin formation. As the decrease in the coagulability of the blood in hemophilia is due to an excess of antiprothrombin in the blood, the disturbance in icterus due to stasis is analogous to the disturbance in hemophilia. Therefore when we find a remedy for the diminished coagulability of cholemic blood we will have a remedy also for hemophilia.

HEILNER (Z)

Thomsen, O: Some Remarks on Preliminary Tests in the Choice of a Donor for Blood Transfusion (Einige Bemerkungen ueber die Vorprobe bei der Wahl eines Spenders zur Bluttransfusion). *Klin. Wochenschr.*, 1933 II, 1801.

This article begins with a review of well known facts with regard to hemolysis and agglutination. The absence of severe acute disturbances following the introduction of hemolyzing serum into the circulation is usually ascribed to extreme dilution of the serum. Thomsen doubts the correctness of this assumption as he observed no disturbances when the agglutination titer was as high as from 256 to 512 and in infusions of from 400 to 500 c.c.m. it sank at the most no lower than one tenth. With regard to the question as to whether hemolysin and agglutinin are different antibodies or merely two functions of the same antibody, Thomsen says that strongly hemolyzing sera usually have also a high agglutination titer and non-hemolyzing or weakly hemolyzing sera a low agglutination titer. However, there are exceptions. In the newborn a strongly hemolyzing effect not infrequently occurs with a low agglutination titer. Moreover, in children the agglutination titer is always low. On the other hand, there are sera with an agglutination titer of from 16

to 32 which have no hemolytic action. Consequently there is no simple quantitative relationship between agglutinating and hemolyzing effects. The following possibilities are cited:

1 Hemolysin and agglutinin are different antibodies.

2 The serum contains in addition to complete, substances in increasing concentration which are essential for the initiation of hemolysis when the antibody becomes fixed to the blood corpuscles.

3 Agglutinin consists of different fractions, one of which exerts a hemolyzing action while the others cause only agglutination.

The last possibility seems to offer the best explanation as dilution of the blood of the recipient would easily bring the concentration below that necessary for the reaction. In not more than 20 per cent of cases is it necessary to reckon with the possibility of severe accidents during transfusion due to intolerance of the patient for the blood of the donor. Nevertheless the blood groups must be determined. This is done with test sera. Experience has taught that erroneous group determinations are not rare when the physician has not fully mastered the method. When the physician is not skilled in the use of the method the tolerance test is preferable. The serum of the patient is mixed with the blood of the donor and if practicable the blood of the patient is mixed with the serum of the donor. This test is reliable if the sources of error are considered. At room temperature and in the thin film between the slide and cover glass the reaction progresses very slowly. This source of error may usually though not always, be avoided by diluting the serum 1:4 or 1:5. Therefore the author recommends the following method:

From 1 to 2 c.c.m. of the patient's blood is withdrawn by venepuncture with a record syringe which is perfectly dry and free from traces of alcohol and ether. The blood is allowed to stand at a temperature not exceeding 37 degrees C. for from ten to fifteen minutes to allow coagulation. It is then centrifuged and the hemoglobin-free serum is pipetted off. The test is made in two miniature test tubes. Six drops of the patient's serum are introduced into the first test tube and 2 drops of serum and 6 drops of salt solution are introduced into the second. Then, to each is added 1 drop of a blood suspension from the donor made by introducing 2 drops of blood from the donor's ear or finger (dry) into a receptacle containing 10 drops of salt solution. The first of the small test tubes is then placed at once on a water bath at a temperature of 37 degrees C. From the second a drop is placed on a glass slide covered with a cover glass, and examined under low power (from 30 to 40 diameters) for the appearance of agglutination. The second test tube is then discarded. If hemolysis takes place in the first tube (it should be completed usually in a few minutes and at the latest after from ten to fifteen minutes) the donor cannot be used. If no hemolysis occurs in the first tube and no agglutination is seen under the microscope, the donor belongs to the same blood group as

patient or is a universal donor. The test is made still more certain when it is conducted reciprocally, i. e. when the serum of the donor is tested against the blood corpuscles of the recipient.

In the literature the statement is frequently made that hemolysis seldom occurs *in vitro*. With fresh sera the author has been able to demonstrate hemolysis in 60 per cent of cases in which it would be expected to occur. The A_1 blood corpuscles are the most easily hemolyzed and the A_2 blood corpuscles the most resistant to hemolysis. FRANK (Z)

Maggi, A. The Transfusion of Blood in the Case of the Child (*La trasfusione di sangue nel bambino*). *Riforma med.* 933 1811, 1813.

The author urges wider application of blood transfusion in the cases of children. He states that in new born infants, umbilical hemorrhage, melena, severe

anemia, and acute infections are indications for blood transfusion. In older children the indications are the same as those in adults. In the endocrine disturbances of childhood the repeated transfusion of small quantities of blood may be of value as the donor's blood contains relatively large amounts of the endocrine hormones which are in normal proportions to one another.

Blood grouping and typing should be carried out for children as for adults in order to prevent reactions from incompatible blood. The donor should be of the same group as the recipient. The use of a universal donor should be avoided if possible.

The author reviews the techniques of blood transfusion. For young infants, the subcutaneous injection of whole blood is best, whereas for older children intravenous administration of the blood is the method of choice. PETER A. ROSE, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Ewig, W: *The Fundamentals for the Recognition of Postoperative Cardiac and Circulatory Disturbances* (Ueber die Grundlagen zur Erkennung postoperativer Herz und Kreislaufstörungen) *Chirurg* 1933 v 774.

The author differentiates three large groups of postoperative circulatory disturbances (1) failure of the cardiac motor (2) a reduction of vascular tonus caused by injury of the vasomotor centers or of the peripheral vessels, and (3) disturbances in the capillary bed. Diminution of cardiac power is followed first by a decrease in the cardiac output, which the heart tries to compensate by an increase in the pulse frequency. If this fails, the heart's blood volume per minute is reduced. The result is increased cardiac activity as after operations a manifest weakening of the heart. The blood lying in front of the left heart leads to stasis in the lungs and acceleration of the heart action. Following the diminution of the strength of the right heart and of much more importance than the classical symptoms of an established heart weakness is the appearance of the following symptoms: increasing venous pressure, palpable liver, the appearance of urobilinogen and traces of albumin in the urine, an increase in the specific gravity of the urine, a decrease of the urinary output during the day and, eventually nycturia. No disturbances of psychic function occur.

In uncomplicated vascular insufficiency—collapse or conditions simulating collapse—the filling of the heart is inadequate. The heart's blood volume per minute becomes very small, the venous pressure is low and the liver is never palpable. Urobilinogen and albumin in the urine and nycturia are absent. As a consequence of poor cerebral circulation, disturbance of the psychic functions or loss of consciousness may ensue. Successful treatment depends upon removal of the primary cause. A clear decision depends upon examination of the three most important components of the circulatory system—the amount of the work of the heart, the venous pressure, and the volume of blood in circulation. To determine the volume of blood in circulation the Congo red or carbon dioxide method is employed. This determination is important in order to know whether or not the circulatory system is filled with a sufficient quantity of blood. The venous pressure is determined exactly by the Moritz Tabora method. In thirty cases the author measured the venous pressure before and after operation and compared his findings with the volume of blood in circulation. Without exception the venous pressure was definitely lowered whenever the volume of blood was markedly diminished. By

means of a not very complicated additional examination—the Grollman acetylene method—the heart's minute volume can be estimated if the basal metabolism is known. Jacob (Z)

ANÆSTHESIA

Kaye, G: *Anæsthesia. Australian & New Zealand J Surg* 1934, III 235

An anæsthetic is expected to abolish appreciation of pain, render the patient quiescent and diminish reflex activity so as to insure muscular relaxation sufficient for the surgeon's needs. No drug can produce these profound physiological changes without risk of injury to the patient. The drug selected should be one the administration of which can be stopped if ill effects ensue. The anæsthetic risk in a given case will depend upon the patient's tolerance to anæsthetics, the nature and length of the operation, the degree of shock and trauma produced, the dexterity of the surgeon, the toxicity of the anæsthetic, and the skill of the anæsthetist.

The choice of the anæsthetic is made from the standpoints of safety and convenience but safety should always be considered first. The local anæsthetics are the safest and are to be preferred unless they are undesirable for technical or psychological reasons. In Australia, ether is likely to remain the standard anæsthetic for years to come. It is certainly the anæsthetic best suited to the non-specialist anæsthetist. Recently the use of carbon dioxide in the induction of ether anæsthesia has attracted considerable attention. Its safety is comparable to that of the ethyl chloride-ether sequence. The concentration of this gas in the inspired air should rarely exceed 5 per cent and should never exceed 10 per cent for more than a few moments. The author believes that the ethyl chloride induction is pleasanter for the patient than the carbon dioxide-ether induction.

Chloroform has rightly fallen into disfavor. Apart from the classical risk of cardiac syncope during its administration, chloroform is too depressing to the circulation for routine use. The gaseous anæsthetics are ideal from the patient's standpoint because of their pleasantness, their freedom from toxicity to the heart and other vital organs, their speedy elimination, and the fact that they have only a very slight tendency to cause after sickness. From the surgeon's standpoint they are less satisfactory than ether in producing relaxation. Adequate premedication, accurate administration of the anæsthetic with efficient apparatus and the judicious supplemental use of ether do much to overcome this drawback. Supplemental ether is rarely contra-indicated and does not materially affect liver function or increase post-anæsthetic vomiting. The author is becoming doubt

that there is a marked tendency in certain quarters to exaggerate their toxicity. The exaggerated statements suggest a failure to apportion correctly (1) the toxic effect of the barbiturate, (2) the effects of prolonged general anesthesia, and (3) the shock of surgical operation.

PURVES-STEWART like Willcox, calls attention to the occasional unexpected toxic effects of the barbituric compounds in ordinary doses.

GILLESPIE states that in a thorough review of the literature he found no record of a case in which a single dose or repeated doses of therapeutic size of a barbiturate caused death in the absence of complicating factors. He disagrees with the statement of Willcox that the repeated administration of barbiturates in one or more daily doses is undoubtedly dangerous.

However, he calls attention to the fact that idiosyncrasy must be reckoned with in a number of cases. By some, the incidence of idiosyncrasy is estimated at 3 per cent, but in Gillespie's opinion this is higher than is evidenced by ordinary clinical experience. Idiosyncrasy is manifested by skin

conditions and neurological disturbances. There is no record of death from a single therapeutic dose even in the cases of patients with an idiosyncrasy to the drug, and continuous doses have caused death only when they were well beyond the therapeutic maximum.

CURRAN reports an investigation of the value of nembutal. He found nembutal a hypnotic of great value and of service also for the performance of minor operations on apprehensive or restive patients. In the cases of adults he gives an initial dose of 3 gr on an empty stomach and increases this by 1, 4 gr until the desired effect is produced. The action of the drug becomes apparent in half an hour and continues usually for another half hour. Only 2 of 325 patients showed alarming effects. Both of these patients were alcoholics and in very poor condition. After the administration of 4.5 gr of the drug, they collapsed and became pulseless, but later in the same day they were quite well. Because of these unfavorable reactions Curran has since limited the initial dose to 3 gr in the cases of physically debilitated patients.

G. PAUL LAROQUE, M.D.

PHYSICO-CHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Menville L. J. and Ané J. N.: Roentgen Study of the Absorption by the Lymphatics of the Thorax and Diaphragm of Thorium Dioxide Injected Intrapleurally into Animals. *Am J Roentgenol* 1934 xxxi 166

Following a review of the experimental studies of others, the authors report the findings of their own investigations with regard to the extent and routes of drainage of the lymphatic systems of different parts of the bodies of laboratory animals. In previous communications they reported that it is possible to render portions of the lymphatic system of laboratory animals and man visible to the roentgen ray by the subcutaneous, intraperitoneal, intracardial and intrapleural injection of thorium dioxide. This article is based on further observations made on rats, dogs, and rabbits. The methods used in the experiments are described in detail. The findings and conclusions are summarized as follows:

1. The lymphatic system of the thorax of laboratory animals can be rendered visible on roentgen examination by the injection of thorium dioxide into the pleural cavity.

2. The injection of thorium dioxide into the pleural cavity apparently did not affect the health of the animals. In no instance was there a pleural effusion such as produced by irritation.

3. Thoracic lymph nodes absorbed the thorium dioxide from the pleural cavity within one hour.

4. In certain cases the route of absorption of the thorium dioxide from the pleural cavity was traced to and through the diaphragm to lymph nodes apparently in the retroperitoneal space.

5. The first portion of the thoracic lymphatic system visualized was the sternal glands.

6. As the first lymph nodes visualized were the sternal group, absorption from the pleural cavity apparently occurred first from the parietal pleura. The lymph vessels of the parietal pleura empty into the sternal and intercostal nodes.

7. Absorption from the visceral pleura was evidenced by visualization of the mediastinal and bronchial lymph nodes.

8. It appears that the diaphragmatic lymphatics have a greater capacity for absorption of particulate matter from the peritoneal cavity than for its absorption from the pleural cavity.

ADOLPH HARTUNG M D

Allibone T. E., and Bancroft F. E.: A New Continuously Evacuated X-Ray Tube for Deep Therapy. *Brit J Radiol* 1934 vii 65

Although continuously evacuated X-ray tubes have been employed in physical laboratories for

some time, their use for hospital purposes has been made possible only recently by the development of improved exhaustion pumps. The authors review the history of the various devices which eventually led to the perfection of apparatus applicable for deep therapy and describe an equipment developed by them. Their experience with the latter indicates that at least up to 250 kv. no difficulty is encountered in the construction of equipment which has the necessary degrees of freedom for medical deep therapy treatment, and that such equipment can be made to operate automatically without elaboration of technique.

ADOLPH HARTUNG M D

Stewart Harrison R.: The Radiation Treatment of Actinomyces. *Brit J Radiol* 1934 vii, 98

The author reviews thirty microscopically proved cases of actinomyces treated by irradiation. In twenty two the condition involved the head or neck, and in eight it occurred in the lungs, intestines or other organs. Two methods of irradiation—the disjunct fractional method and the protracted fractional method—were employed. The protracted fractional method consisting of daily small doses, usually from four to ten treatments was found to be superior to the disjunct fractional method, in which rather massive single doses were given. In the use of the former skin changes and the danger of extensive oedema were avoided. In all of the twenty two cases with involvement of the head or neck the results were successful, whereas in the eight cases of involvement of other organs, treatment by the disjunct fractional method was unsatisfactory.

E. E. BARTH, M D

MISCELLANEOUS

Tucker W. E.: Physical Methods in the Treatment of Injuries. *Practitioner* 1934 cxxxii 247

The author discusses early active movement and massage in cases of injury of joints, muscles and ligaments.

He states that in injury to joints the lymphatics and venules of the entire diameter of the limb are affected, whereas in injury to muscles and ligaments only the lymphatics and venules of a small area are involved and the rest are able to remove the traumatic effusion. Therefore injured joints must be relieved from weight bearing at first, whereas in injured muscles and ligaments can be actively used at once provided they are supported.

The reasons for the occurrence of swelling in recently injured joints when they are moved vigorously with weight bearing are as follows:

1. Active movement with weight bearing adds trauma to the inflamed synovial membrane.

- 2 The blood supply is increased
- 3 The metabolism in the joint and the production of by-products are increased
- 4 Atonic muscles exude fluid when they are used actively
- 5 The lymph is increased
- 6 Stasis of fluid results from damage of the lymphatic and venous circulation

On account of the swelling from early active weight bearing the usual treatment has consisted of rest. This has resulted in stiffness of the joint. If a stiff joint is moved too actively swelling occurs because of stasis of fluid due to fibrosis around the damaged lymphatics and venules.

If gentle movement without weight bearing is performed at first it aids in depressing the traumatic effusion, increasing the tone of the muscles, and preventing the formation of adhesions.

Massage used early following injury to a joint relieves the immediate swelling. Frequently however there is a recurrence of the swelling. The

author attributes this to the presence of fibrin and cells in the effusion. He advocates the continued use of massage to disperse the excessive effusion by providing fluid to aid in the absorption.

The objects of the various methods of treatment are (1) early absorption of the traumatic effusion to prevent fibrous tissue reaction and the formation of adhesions and thickenings, and (2) repair of damaged structures without cicatricial contraction and loss of elasticity.

The methods of treatment outlined are (1) preliminary rest with relief of weight bearing, (2) gentle stretching of the joint capsule by the use of movements over which the patient has no voluntary control and finally active movements, (3) graduated faradic contractions with avoidance of pain and spasm, (4) diathermy and ionization, (5) massage under heat, and (6) support.

The method of treatment and its application for various types of injuries to muscles, tendons, and joints are described. GERTRUDE BEARD, R. N.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

McNeer G: Arsenical Keratoses and Epitheliomata. *Ann Surg* 1934 xcix, 348

This report is based on three cases of arsenical epithelioma and one case of arsenical keratosis.

The author states that apparently the amount of arsenic taken is not of fundamental importance. In the cases reported the shortest period between the first ingestion of arsenic and the appearance of the cutaneous lesions was one and a half years; the longest, seventeen years and the average seven and a half years.

The lesions produced by arsenic are of three types—dermatitis keratoses, and epitheliomata. Acute arsenical dermatitis leaves a brownish pigmentation which may last for years. At first this is accompanied by scales, fissures, numbness and tingling of the parts involved. The keratoses affect mainly the palms and soles, extensor surfaces, elbows, and knees. Arsenical epitheliomata are usually squamous-cell carcinomata of Grade 1 or 1+. They grow slowly and do not form metastases in the regional lymph glands until late. They are only moderately radiosensitive. The prognosis as to life is fairly good. A feature of the disease is the great multiplicity of the lesions that develop. As one group is cured a new crop appears elsewhere.

The treatment depends on the form and extent of the lesions. In cases of dermatitis the intra-venous injection of sodium thiosulphate in amounts up to 1 gm. daily for six days has proved successful. In the cases reported by the author the best results were obtained by treatment with low voltage X-rays or a mustard-gas solution. In the treatment of small lesions the electric cautery was found of great value. Surgical excision is rarely possible as the lesions are too numerous. The application of radium plaques of 1,000 mc. hrs. to each lesion has proved beneficial. Frequent observation of the patient is important.

EARL C. ROYBARK, M.D.

MacCarty W. C., and Hanumder E: Has the Cancer Cell Any Differential Characteristics? *Am J Cancer* 1934, xv, 403.

In a previous communication MacCarty said, "Both reparative regenerative cells and malignant cells possess one or more nucleoli, but as a rule those of malignant cells are much larger in proportion to the size of the nucleus than those of reparative cells. Although a cancer cell may not always be distinguishable from a normal regenerative cell it frequently may be because of a difference in the volume relationship between nucleolus, nucleus, and the whole cell in the two types."

This report is based on a study of 65 cases of primary and secondary malignant growths and 22 cases of chronic inflammation in patients who had no evidence of a benign or malignant neoplasm. Fresh tissue sections from 6 to 12 microns thick and stained by Terry's modification of Unna's poly-chrome methylene blue were studied under the oil immersion lens. The shadows of a number of nuclei and nucleoli approximately 20 of each specimen from different parts of the section, were projected through a constant distance by means of a camera lucida and traced on paper. Almost 4,000 cells and sections of fresh and fixed tissue were studied. The previously traced nuclei and nucleoli were then enlarged in order to obtain measurable areas of the latter. A planimeter was used to determine the projected areas of nuclei and nucleoli. From these measured areas of the enlargements the actual areas were obtained by dividing by the appropriate constant of magnification and the final areas were expressed in square microns.

On the basis of this study the following conclusions drawn in a preliminary report in 1933 were confirmed:

1. The mean areas of the nucleoli of malignant cells are greater than those of the corresponding non-malignant cells.

2. The difference between the nucleolar areas in malignant and non-malignant cells is greater than the difference between the nuclear areas.

3. In the individual cell the range of the ratio of nucleolar area to nuclear area varies from 1:5 to 1:17 for malignant cells and from 1:13 to 1:45 for non-malignant cells.

The authors emphasize that if their observations are correct they indicate the necessity for histopathologists to become acquainted with the cytology of fresh tissues if cancer is to be recognized in its early stage.

ARTHUR S. W. TUCKER, M.D.

Coffey R. C.: Principles Involved in the Treatment of Carcinoma Affecting Organs Located in the Male and Female Pelvis. *Am J Surg*, 1934 xciii, 1.

Cancer of organs in the male or female pelvis is well located for radical treatment as the contents of this body cavity may be removed without the sacrifice of vital functions.

The surgical principles to be observed are the avoidance of infection so far as possible; the removal of as much connective tissue as possible, and drainage of the resulting cavity with material of a capillary structure, namely plain sterile gauze.

Cancer of the rectum has a good prognosis when it is operated upon under spinal anesthesia. With the use of blood transfusion and the large lower

gauze pack, the operation may be done in one stage more safely than in two stages.

In cancer of the rectosigmoid, which is usually associated with obstruction it is necessary to relieve the obstruction and delay resection until the patient has recovered from the toxemia. The removal of the cancer should follow the same principles as those followed in the operation for cancer of the rectum. An ileostomy should be done several weeks before the colectomy in order to give the ileum sufficient time to take over the absorptive function ordinarily performed by the cecum.

Cancer of the bladder has possibly the best prognosis of all internal cancers as it can be diagnosed early and it does not form metastases until late. The milder forms of papillary growths may be cured by fulguration or radium irradiation. In the male, the ureters may be transplanted into the rectum and the bladder removed at the same operation. In the female, this should be done in two stages or destructive doses of radium should be administered after ureteral transplantation. In the male, the prostate seminal vesicles, and bladder may be removed by the retrograde technique with comparative ease and with preservation of sphincteric control.

Cancer of the body of the uterus is best treated by hysterectomy. In cervical malignancy the treatment of choice is radium irradiation because of the radiosensitivity of the lesion and because direct transplantation of cancer cells into the surrounding connective tissue is apt to occur in a surgical operation.

In low grade malignancy of the ovary the peritoneal transplants may be treated with radium successfully by building a mechanical quarantine across the pelvis and screening the intestines from the radium.

GEORGE A. COLLETT, M.D.

DUCTLESS GLANDS

Albright, F., Beard, P. C., Cope, O. and Bloomberg, E.: Studies on the Physiology of the Parathyroid Glands. IV. Renal Complications of Hyperparathyroidism. *Am J M Sc* 934, 1934, 49.

The authors review eighty-three cases of hyperparathyroidism collected from the literature and from their own experience. Kidney lesions of varying severity were found in about 50 per cent. The cardinal metabolic abnormalities in hyperparathyroidism are hypercalcemia, hypophosphatemia, hypercalciuria, and hyperphosphaturia. The kidney damage in this disease seems to be due to a deposition of calcium and phosphorus in the kidney rather than to inflammation. Therefore the condition would be called "nephrocalcinosis" more correctly than "nephritis."

According to the severity of involvement, the cases may be divided into three groups. In those of one group there is a deposition of calcium phosphate stones in the renal pelvis with the secondary produc-

tion of pyelonephritis. In those of another group, a more acute form, there is a deposition of calcium in the kidney parenchyma with resulting fibrosis and changes simulating chronic glomerular and vascular nephritis. In those of the third group an acute form characterized by anuria and death from an undetermined cause in a few days, calcium is deposited in the renal parenchyma as well as in other organs, but there are no chronic changes in the kidneys.

The occurrence of renal stones in 37 per cent of cases of hyperparathyroidism suggests that this disease should be suspected in all cases of nephrolithiasis. The renal lesions of hyperparathyroidism may occur without bone lesions, the former being an index of the severity of the disease and the latter an index of its duration. The occurrence of renal involvement produces changes in the usual picture of hyperparathyroidism such as absence of hypophosphatemia, a decrease in the calcium excreted in the urine, an increase in the calcium excreted in the feces, and a decrease in the phosphorus excreted in the urine.

In discussing treatment to prevent renal damage in hyperparathyroidism the authors state that fluids should be forced, alkalinity of the urine should be avoided, ammonium chloride and other acid-producing salts are contra-indicated and a high phosphorus diet, while indicated for demineralization, imperils the kidneys and should be given only when the blood values can be carefully followed. The authors are of the opinion that almost all patients with hyperparathyroidism will eventually develop kidney damage unless the condition is corrected by extirpation of the parathyroid tumor responsible.

LESTER R. DRACHMANN, M.D.

Leriche, R., Jung, A. and Camil, S.: Investigations of the Action of Parathyroid Extract on the Skeleton (Recherches sur l'action de l'extrait parathyroïdien sur le squelette). *Presse méd. Par* 1933, 42, 2059.

In experiments on animals the authors found it possible to produce a clinicopathological syndrome resembling that of von Recklinghausen's disease of bone by injecting parathyroid extracts. The experimental animals were rats from three to four weeks old weighing from 45 to 50 gm. Of the various parathyroid extracts used, Collip's parathormone was found to be the most effective. After eight daily injections of 20 units of this preparation a fibrosis of the marrow of the femur in the diaphyseal and metaphyseal regions were observed. Hematopoietic marrow disappeared. In the cancellous bone and cortex in the metaphysis and diaphysis lacunar resorption occurred and the Haversian canals became wider than normal. Roentgenograms after the twelfth day demonstrated a marked reduction in the density of the medullary portions and a thinning of the cortex. Other preparations of the parathyroid glands did not produce such marked changes until after a much longer period and after the administration

tion of much larger doses. When paratyron was used daily injections of from 20 to 40 units for from one week to two months were required to produce lacunar absorption of bone and no fibrosis of the marrow occurred. All of the parathyroid extracts produced hypercalcemia, but there were marked differences in the cellular changes in the bones brought about by the different preparations. The authors therefore conclude that the type of extract used is of prime importance in both experimental and clinical work.

The parathyroid glands of the injected animals presented no gross abnormalities but on microscopic examination showed disappearance of blood capillaries roughly in proportion to the amount of extract injected. After many injections a definite sclerosis of the gland was produced and the normal granular appearance of the cytoplasm of the parathyroid cells was modified. The nuclei were changed, appearing elongated or triangular instead of round

or oval. These findings were interpreted by the authors as suggesting degeneration of the gland due to an oversupply of the parathyroid hormone.

LESTER R. DRAGSTEDT, M.D.

Burrows H.: The Occurrence of Scrotal Hernia in Mice under Treatment with Oestrin. *Brit J Surg* 1934, xii, 507

Burrows noted the development of scrotal hernia in 19 of 49 mice under treatment with oestrin applied on the skin or injected hypodermically. This condition was not found in 580 untreated mice. Burrows believes that the effect of the oestrin may consist in relaxation of the layers of muscle which regulate the caliber of the passageway between the abdominal cavity and the scrotum. It may be comparable to the softening of the pelvic ligaments and muscles during the later stages of pregnancy when large quantities of oestrin are circulating in the body.

A. F. LARUE, M.D.

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

SURGERY OF THE HEAD AND NECK

Head

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INTERNATIONAL ABSTRACT OF SURGERY

AUGUST, 1934

ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

HEAD

Dandy W. E.: Cerebral (Ventricular) Hydrodynamic Test for Thrombosis of the Lateral Sinus. *Arch Otolaryngol* 1934, 71, 297

As thrombosis of the lateral or sigmoid sinuses may suggest an intracranial tumor or abscess Dandy devised a test to help demonstrate such a lesion.

The hydrodynamic principles of the Dandy test are the same as those of the Queckenstedt test, the only difference being that in the Dandy test the needle is introduced into the ventricle. Compression of one or both jugular veins causes venous congestion of the cerebral veins, and this in turn produces a rise in the intracranial pressure which can be registered by a ventricular manometer as accurately as by a lumbar manometer. Occlusion or patency of the lateral sinus should therefore be disclosed as readily as by the Queckenstedt (Tobey Ayer) test.

Dandy reports the use of his test in five cases. The findings were checked by the Queckenstedt test in three cases and by autopsy in the two others.

In conclusion Dandy says that unilateral jugular compression (each side tested separately) will cause the pressure of the ventricular fluid to rise (with recognized exceptions) if the lateral sinus is patent, and the level of the fluid will promptly fall when the venous compression is relaxed. If a rise of the ventricular pressure does not follow jugular compression on one side but follows compression on the other the lateral sinus is probably occluded or absent on the former side. The use of this procedure instead of the spinal test is suggested only for cases in which a ventricular puncture is necessary to diagnose or eliminate the presence of a tumor or an abscess of the brain by ventriculography.

PAUL W. GREENLEY M.D.

Stein I. and Geschlicker C. F.: Tumors of the Parotid Gland. *Arch Surg* 1934, 78, 492

Tumors of the parotid gland may be benign or malignant. The authors review 241 parotid tumors

found in 50 000 surgical cases admitted to the Johns Hopkins Hospital Baltimore. The incidence of these tumors was 80 per cent in white patients and 1.19 per cent in colored patients.

Parotid tumors are always unilateral and may occur on either the right or the left side. In about 50 per cent of the cases reviewed the tumor was at the angle of the jaw and in 30 per cent directly over the parotid gland.

Trauma and infection are not positive predisposing factors. The benign tumors occur most frequently in the third decade of life and grow slowly with periods of quiescence. They are not attached to the skin. The pain associated with them is always local. The malignant tumors occur most frequently after the age of forty five years and grow rapidly. They are diffuse tumors attached to the skin and invading the surrounding tissues. In 30.9 per cent of the cases reviewed there was bilateral metastatic enlargement of the cervical lymph glands. Recurrences after surgery are more frequent in cases of benign tumors than in those of malignant tumors.

The elements which make up the microscopic picture of both the benign and the malignant groups of mixed parotid tumors are (1) epithelial cells, (2) connective tissue (3) myxomatous connective tissue, and (4) cartilage. The index of benignity of the tissue depends directly on the amount of stroma present. The greater the amount of connective tissue the more benign the tumor. After recurrence the microscopic picture is changed the epithelial elements predominating over the connective tissue and cartilage. The tumor has then become a non-metastasizing basal-cell carcinoma. Malignant parotid tumors consist of epithelial elements arranged often in the usual adenocarcinomatous or adenocystic form. The fibrous elements are sparse. The adjacent tissues, and often also the regional lymph nodes, contain the basal-cell infiltration.

The differential diagnosis must exclude parotitis, salivary calculus tumors of the jaws and antrum and all forms of lymphadenopathy.

Of the various forms of treatment, the most desirable is complete excision of the tumor with the healthy tissue surrounding the capsule either with the cautery or by sharp dissection followed by chemical cauterization of the tumor bed with alcohol or phenol. Of 83 patients with a benign or malignant tumor of the parotid who were treated by sharp dissection of the tumor 73 were cured. Whether the excision is accomplished by knife or cautery the incidence of facial palsy is very high. In cases of mixed tumor irradiation is of doubtful value, probably because of the resistant nature of the cells and tissues and the difficulty of delivering heavy doses to the region involved. Irradiation has been more successful in carcinoma of the parotid. Statistics show that complete excision is the ideal treatment. In cases of recurrence, a preliminary course of irradiation should be given and followed by operation with postoperative chemical cauterization or irradiation of the tumor bed. In inoperable cases the procedure of choice is irradiation with the X-rays or the radium pack.

The advisability of preserving the facial nerve must be determined by the surgeon at the time of the operation. His decision must be guided by the gross character of the tumor and the sex and age of the patient. BENJAMIN G. P. SHAFER, M.D.

Schirm, G.: Tumors of the Parotid Gland with Special Regard to the Cases Observed During the Years from 1919 to 1931 Inclusive at the Surgical Clinic at Jena. (Die Parota-Tumoren Unter besonderer Berücksichtigung der im Zeitraum von 9 bis 931 in der Chirurgischen Klinik zu Jena beobachteten Fälle.) 933 Jena, Dissertation.

In the surgical clinic at Jena twenty two cases of mixed tumor of the parotid gland were observed during the years from 1919 to 1931 inclusive. Eight of the tumors were malignant and fourteen were benign. In one of the cases of malignant tumor the neoplasm had already involved the auditory canal and one of its processes had reached the neck. The condition was inoperable and the patient died a year later. In another case the tumor had invaded the skull cavity causing bilateral choked disk, sensory aphasia and the appearance of tumor cells in the cerebrospinal fluid. This case also was inoperable and the patient died a month later. In addition there were three other cases in which the condition was inoperable when the patients entered the clinic. In these the treatment was limited to irradiation. Death occurred after one year in one case and after six months in another. The results in the third case are unknown. Three of the patients (37.5 per cent) were operated upon and regarded as cured.

Of the fourteen patients with benign mixed tumors, all were operated upon. In two cases in which the tumor had undergone cystic degeneration postoperative irradiation was given. The cure has been maintained for several years. Among the remaining twelve cases recurrence was observed twice. In five other cases, four years have not yet elapsed since

the operation. Therefore the possibility of recurrence must yet be considered.

In carcinoma of the parotid gland the prognosis is extremely poor as the patients generally come for operation in a stage of the disease at which cure is hardly to be expected even from radical operation. As a rule, metastasis formation is already too far advanced. Of ten cases, seven were in reality inoperable but only three were treated by irradiation alone. In six, a total enucleation, and in one a partial enucleation was done. The results in two cases are unknown. Five patients died within from one to six months after the operation, two returned from years later with a recurrence and one is still free from recurrence after seven years. The results of irradiation are not satisfactory.

The anatomical, pathological, and clinical discussion is similar to that in well-known textbooks and the current literature. GEBLACK (Z)

Malowitschko, E. and Popenko, I. G.: A Case of Amoebic Infection of the Human Submaxillary Gland (Ein Fall von Amöbeninfektion der menschlichen Unterkieferdrüse). *Arch f. Schiff- u. Tropen Hyg.* 1934, xxviii, 8.

A man died from an esophageal injury caused by a bone splinter. In the preparation of specimens for histological examination amoebae were discovered in the excretory ducts of the submaxillary glands. From their location the impression was gained that they were unable to penetrate the membrana propria, and merely pushed the epithelial cells apart. In the determination of the type of amoeba the very small central karyosomes and other peculiarities ruled out all known varieties of amoeba and it was necessary to assume that this was a new type amoeba submaxillaris.

It appears that diseases produced by amoebae cannot always be detected during life as pronounced symptoms do not develop in the chronic course of the affections. GEBLACK (Z)

Ziegelman, E. F.: Calculi in the Submaxillary and Sublingual Glands and Their Ducts. *Arch Otolaryngol.* 1934, vii, 38.

Calculi in the sublingual and submaxillary gland or their ducts are not common. Those occurring in the gland proper usually do not cause pronounced symptoms. As a rule only one or two calculi are present, but there are reports of cases in which many were found. Regardless of their number they tend to obstruct a limited portion of the gland if they are located in that structure or to produce complete obstruction if they are located in the duct. The symptoms are usually swelling and pain in a portion of or throughout the gland. As a rule tenderness can be demonstrated. New and Harper believe that the most common symptom is the repeated exacerbation of manifestations of an acute infection rather than the presence of pain.

The calculi have a tendency to be extruded by way of the main duct. However their size is such that

they usually become localized in some part of it. As a rule even those which reach the end of the duct cannot be extruded as the opening is too small.

Numerous theories have been advanced to account for the formation of these calculi. Inflammatory lesions of the gland seem to be a factor. Epithelial debris in the smaller ducts, bacteria, and the ray fungus have been found to form the nuclei of the calculi in individual cases. The author concludes from clinical observation that a large percentage of persons with salivary calculi have a so-called endocrine characteristic (pre-adolescent or postadolescent hyperpituitary type). He calls attention to the possibility of parathyroid dysfunction with a change in the metabolism of calcium in such persons. The calculi have been found to be composed of calcium carbonate and phosphate.

The treatment is dependent upon the symptoms. Cancer of the floor of the mouth, lymphadenitis, actinomycosis and carcinoma of the mixed type, tuberculosis, and syphilis of the glands must be ruled out. On bimanual palpation a small firm mass may often be felt. The diagnosis of calculi is usually confirmed by the roentgenogram. By some it is claimed that error in the diagnosis can be avoided by X-ray examination after the injection of lipiodol.

The author has found that in a limited number of cases probing of the duct is sufficient treatment. In one case it was followed by extrusion of the calculi. A thorough knowledge of the anatomy of the floor of the mouth is essential before operation is performed on patients with salivary calculi. In the avoidance of surgical shock during the course of operations on the floor of the mouth the avoidance of trauma to the submaxillary ganglion is of particular importance. Careful exposure and fixation of the duct during removal of the calculus are essential. General anesthesia is to be preferred. In the procedure followed by the author the tongue is held laterally with a forceps and a longitudinal incision is made over the course of the duct. The duct is isolated by sharp dissection and held up by means of a silk loop. It is then opened and the calculus removed. The defect in the duct is left open or is closed with fine catgut; the possibility of stricture being kept in mind.

When the calculus is in the immediate vicinity of the submaxillary gland or in the gland proper removal of the gland through an inframaxillary incision may be necessary. When a calculus occurs in the sublingual duct or gland, its removal through an incision over the calculus is usually quite simple. The most common site of duct stones is the caruncle. Removal of calculi from the gland or of the entire gland is accomplished easily because of the fixed position of the gland alongside the mandible.

ARMOR S. W. TOWNSEND M.D.

Martin J. D., and Elkin D. C.: Tumors of the Salivary Glands. *Arch Surg* 1934 LVIII 737

The most common tumors of the salivary glands are the so-called mixed tumors. According to the

theory most widely accepted mixed tumors of the salivary glands are of epithelial origin.

These tumors may be divided into two groups according to the amount of embryonal tissue they contain. The more cellular the tumor the more apt it is to recur when it is not removed completely.

The greatest hope of cure is offered by the use of the roentgen rays and radium and early removal of the primary growth. The prognosis is not good either for complete cure or for the prevention of recurrence. The recurrent tumor becomes more malignant than the primary tumor.

SAMUEL KAHN M.D.

EYE

Peter L. C.: The Use of the Superior Oblique as an Internal Rotator in Third Nerve Paralysis. *Am J Ophth* 1934 XVII 197

In the procedure described an incision was made through the lid, the tendon of the oblique muscle exposed and severed, an opening made in the capsule of Tenon over the internal rectus, and the tendon of the oblique muscle drawn through this opening and sutured to the attachment of the internal rectus tendon.

VIRGIL WESCOTT M.D.

Roy J. N.: A Voluminous Orbitocranial Osteoma Consecutive Cerebral Abscess of Nasal Origin. *Brit J Ophth* 1934 XVIII, 159

The patient whose case is reported was operated upon radically in 1925 for an ivory hard osteoma of the orbit developing on the ethmoid bone. Cure was apparently maintained until 1931. A recurrence was then manifested in the form of a fibroma starting from the nose. The fibroma underwent ossification. It invaded first the superior half of the orbit and then the cranial cavity. Nasal infection spread to the brain by way of the tumor. At operation, an abscess of the frontal lobe was discovered. Death occurred from diffuse leptomeningitis twenty-eight hours after the operation. LESLIE L. MCCOR M.D.

Thomas, J. W. T.: Observations on Some Matters Associated with Experimental Corneal Grafting. *Brit J Ophth* 1934 XVIII 129

Experimental work on the eyes of rabbits has shown that whole thickness corneal tissue from another rabbit can be transplanted successfully and that the grafts may remain transparent if a particular technique is used. Thomas reviews the results of sixteen homogeneous graftings which were done by the technique found to be most successful.

Of the sixteen homogeneous grafts ten were transparent, one had a clear area, one was nebulous with clear areas, three were opaque and one became partially detached. Sixty-two per cent were therefore clear grafts and 75 per cent allowed useful vision.

Of five heterogeneous grafts done with the same technique, not one could be described as clear and four were quite opaque. Heterogeneous grafts tend also to become vascularized.

The progress of opacity in homogeneous and heterogeneous grafts led to the conclusion that heterogeneous grafts should not be applied to man.

The operation described is a cross-stitching method such that the gap in the cornea of the host is filled up accurately by the graft and the graft is held securely in place. A water tight union is obtained and re-establishment of the anterior chamber is insured. These results depend upon the sloping or shelving edge of the graft and of the hole in the cornea and upon the adequate and uniform pressure made on the graft to hold it in place. Re-establishment of the anterior chamber as soon as possible is necessary to prevent anterior synechiae. The central position of the graft over the middle of the pupil and the size of the graft allow the iris to remain free when the pupil dilates.

The limitation of fibrin formation and the prevention of anterior synechiae can be insured by:

1. The establishment of close apposition of the graft to its bed by the technique previously described as giving the best results. In this way a water tight union can be obtained.

2. The use of a suitable mydriatic before the operation and in the after treatment.

3. Limitation of engorgement of the iris by the use of adrenalin after the anterior chamber has been opened.

4. The application of citrated saline solution (70 c cm. of a 0.9 per cent sodium chloride solution and 30 c cm. of a 3 per cent sodium citrate solution) to the graft while it is being cut, to the eye of the host while the portion is being removed, and to the sutures before their insertion.

An eyeless needle made of hardened steel and similar in curve to a No. 4 half curved needle (with eye) but slightly shorter is apparently advantageous.

A single knot is tied in the silk, and the thread, held taut, is introduced into the groove in the needle. The thread is then drawn along the groove so that the knot enters the end of the needle and is drawn up to the other end of the groove. With the thread still taut, a touch on the groove with a pin or the back of a knife will keep the thread and knot in position. The forceps is then applied, the last half millimeter of the needle being left projecting. The pressure effectively closes the needle end over the thread and knot so that the suture is firm and secure.

In the whole series of experiments it was found that all sensitive grafts were vascularized while all the clear grafts were either completely or almost completely avascular and remained insensitive. In one case the graft had a blood supply from an adherent iris for two months, but at the end of that time the iris became free, the blood supply ceased, and the graft became sensitive. The conclusion was drawn that the establishment of an afferent nerve supply to a corneal graft depends upon a precedent or concurrent growth of blood vessels in the graft. It seems to matter little whether the blood vessels are supplied from an adherent iris or grow in from the margin of the cornea.

By the method of double transillumination the depth of the anterior chamber can be judged from the distance between the two illuminated spots on the cornea. When the anterior chamber is very shallow the spots are practically superimposed. When the anterior chamber is normal they are separated.

If the anterior chamber is shallow the spot of light gives an approximate idea of the size of the pupil. The deeper the anterior chamber the less clearly defined are the margins of the lighted areas. When the anterior chamber is normal the spots of light are small and separated entirely from each other. If the pupil is small, but are large and overlap if the pupil is large. If the pupil is eccentrically placed the arrangement of the illuminated areas on the cornea gives a clue to its position. When the anterior chamber is normal and the pupil is elongated and slit-like, the lighted areas are slit-like and overlap if the transillumination is done at 180 degrees but are separated if the transillumination is done at 90 degrees. If the anterior chamber is shallow the two lighted areas are almost superimposed and their shape will give a clue to the shape of the pupil.

When there is an adhesion of one margin of the pupil to the cornea there will be two patches of light on the cornea with a common border corresponding to the synechia, whereas the free margin of the pupil allows a separation between the other margins of the illuminated patches.

Alteration in the size of the pupil by mydriatics or miotics can be observed and recorded, and the presence of holes in the iris or an atrophic thin iris can frequently be determined. *LESTER L. MCCOY, M.D.*

EAR

O'Malley J. F.: Aural Discharges: Their Significance and Treatment. *Brit. M. J.* 1934, 4, 741.

The author states that all discharges from the external auditory meatus are pathological, and the secretion of cerumen may become pathological when it is excessive or the cerumen is impacted.

The source of a pathological discharge may be the pinna, external meatus, middle ear, mastoid antrum or cells, or even the intracranial cavity.

O'Malley classifies aural discharges as watery, purulent, hemorrhagic, and ceruminous.

JAMES C. BRADY, M.D.

Podestá, R.: Acute Osteomyelitis of the Temporal Bone in Childhood (Consideraciones sobre las osteomielitis agudas del hueso temporal en la infancia). *Seminars Méd.* 1934, XII, 436.

Reports of primary osteomyelitis of the temporal bone are rare. Scheibe has observed only one case, apparently the first one reported in Germany. The condition is scarcely mentioned in textbooks, and most of the cases reported have lacked microscopic confirmation of the diagnosis. To Podestá's knowledge, complete histological descriptions have been given only by Brock and by Neff who reported seven

cases three of which came to autopsy. Neff and Schlitter have described the clinical picture.

Podestá gives a detailed clinical and pathological report of a case of the condition in a five-year-old boy. The clinical diagnosis was chronic suppurative otitis media and subperiosteal zygomatic and temporal abscess. After a radical mastoid operation, the child died with signs of thrombosis of the cavernous sinus. The correct diagnosis was made only on microscopic examination. The causative organism was the pneumobacillus. The entire temporal bone, the body and wings of the sphenoid and the adjacent parts of the malar bone showed an intense diffuse necrotizing inflammation.

The exanthemata, influenza and diabetes may produce necrotic lesions in the temporal bones but in these conditions the lesions are small and circumscribed and run a favorable clinical course, and the bacteria responsible for them have a marked necrotizing action on the mucosa of the air-containing cavities of the ear. Typical acute osteomyelitis of the temporal bone is characterized by massive invasion involving the adjacent bones, coarse macroscopic lesions due to the extensive venous thrombosis, and, most important, integrity of the mucosa of the tympanum, antrum and remaining air cells. These characteristics justify recognition of the condition as a clinical entity.

Of the two theories of the etiology of the disease, the otogenic and the hematogenic, the otogenic has received widest recognition but Podestá believes that the pathological picture supports the latter as the lesions of the middle ear are insignificant in comparison with those of the temporal bone and are hyperplastic instead of necrotizing. The rarity of the affection also agrees better with the hematogenic theory.

The greater gravity of osteomyelitis of the temporal bone as compared with osteomyelitis of the other bones of the cranial vault is due to the venous sinuses and their tributaries which completely surround the temporal bone. In the majority of the reported cases the ear was normal prior to the onset of the disease. Even in the cases in which the condition was preceded by chronic otitis media, the lesions in the tympanic mucosa were slight.

M E. MORSE, M D

Daggett W L., and Bateman G H.: Secondary Thiersch Grafting of the Radical Mastoid Cavity Through the Meatus. *J Laryngol & Otol.*, 1934 xlii: 169.

The authors describe their procedure in the use of secondary Thiersch grafts following radical mastoid operations to obviate the prolonged process of granulation that is normally necessary. The first requisites are proper performance of the original operation and the removal of all diseased bone, granulations, cholesteatomata, and mucous membrane. The re-fashioned meatus must be large as the procedure described is a per meatal application of grafts.

After the operation the dressings are changed on the seventh day under nitrous oxide anesthesia. From the seventh to the fourteenth day the dressings are changed and the cavity is syringed when necessary. On the fourteenth day the grafts are prepared, applied, and fixed in position by the use of a wax solution poured into the ear. Wax has been found superior to gauze strips and tampons. The formula for its preparation is given. Except for the changing of superficial dressings the ear is not disturbed until the twenty-eighth day when the wax is removed. The cavity is then found to be dry and epithelialized. Thereafter the cavity is inspected periodically as circumstances dictate.

JAMES C. BRASWELL, M D

NOSES AND SINUSES

Potlock, F J: Plasmacytoma of the Nose and Nasopharynx. *Arch Otolaryngol.* 1934, xix: 311.

The plasmacytoma is a tumor composed of cells of the plasma type, the origin of which is not certain. According to the theory most widely accepted plasma cells are derivatives of small lymphocytes. According to another theory they are derived from the fibroblasts of the adventitia of the blood vessels. Mallory believes that lymphocytes appear in the form to which the term plasma cell is applied as the result of a change which they undergo in the tissues. The plasma cell is usually somewhat larger than a lymphocyte and has a basophilic cytoplasm. The nucleus, which is usually single, but may occasionally be multiple, is small and eccentrically placed. The nuclear membrane is definite. The chromatin stains deeply and is usually arranged about the periphery of the nucleus giving the cell a so-called cart wheel or clock face appearance.

In the nose and throat plasma cells are found most frequently in association with chronic inflammatory conditions among which are syphilis and tuberculosis. Claborn and Ferns believe that many plasmacytomata are benign neoplasms and that most of those that appear malignant are manifestations of multiple myelomata. According to Rosenwasser plasma cells are derivatives of lymphoblasts and a plasmacytoma is a lymphoblastoma with more or less extensive cellular transformation to the plasma-cell type.

The author reports two cases of plasmacytoma of the nose and nasopharynx. In one of them the histological picture resembled that of multiple myelomata although X ray examination of the entire skeleton failed to reveal involvement of any of the bones. In the other the presence of multiple myelomata of the sternum skull and liver was demonstrated at autopsy. The author believes that although many of the reported tumors are relatively benign these tumors are true neoplasms and a careful X ray examination of the entire skeleton should be made to rule out multiple myelomata which are rapidly progressive and lead to a fatal termination.

ARTHUR S W. TUCKER, M D

Smith, F.: The Management of Chronic Sinus Disease. *Arch Otolaryngol* 1934, 44, 137

Smith discusses only cases of chronic infection in which intranasal treatment is unsuccessful and the pathological changes are of such a nature and so advanced that no type of treatment can effect a return to normal.

The technique employed by him is that described by Lynch, Knapp and Jansen. The ethmoidal labyrinth is approached through an incision just medial to the inner canthus of the eye. Through this exposure access is gained to the lateral mass of the ethmoid, sphenoid and frontal sinuses and all work is carried out under direct vision.

This procedure yielded satisfactory results in practically all of more than 500 cases. Accidents and complications were rare but in some of the cases there was a persistent excessive flow of mucus. The cosmetic results were excellent.

JOHN F. DILLON, M.D.

Love, A. A.: Dentigerous Cysts of the Antrum. A Report of Two Cases. *Arch Otolaryngol* 1934, 44, 343

The characteristics of dentigerous cysts of the antrum are: (1) a bony shell surrounding the entire tooth which is easily separated from the wall of the antrum and from the soft tissue portions of the cyst; (2) a soft tissue layer composed of fibrous connective tissue which sometimes contains thin layers of cartilage or bony tissue with a lining of usually stratified squamous epithelium; (3) the presence of a completely or incompletely developed tooth or teeth in the cyst, the crown or crowns of which usually face inward; and (4) the presence of a fluid in the cyst. When not infected, the wall of the cyst is comparatively thin, the subepithelial fibrous layer is quite dense, the epithelial layer is intact, and the fluid is thin and straw colored and contains cholesterol crystals. When infected the bony shell does not separate from the antral wall easily, the soft tissue layers are thick, vascular and infiltrated, the epithelium is partially or completely destroyed, and the fluid contents may be purulent, sanguinopurulent or thick and caseous.

The cause of the cysts is not known definitely but is probably the retention of fluid in the stellate reticulum of the follicle of the tooth situated between the cuticular dentine and the crown of the tooth, which distends the follicle into a cyst lined with epithelium. The theory held by many that the cyst develops from the so-called epithelial rests of Malassez does not account for all of the structures found.

The treatment indicated is removal of the entire cyst by careful dissection through a minimal opening in the canine fossa followed by closure of that entrance and provision for subsequent drainage by the formation of a good-sized naso-antral window under the inferior turbinate. This should be done entirely transantrally to prevent trauma to the intranasal structures.

When the entire cyst is removed, the prognosis is excellent. The cysts do not metastasize, and malignant degeneration has not been reported.

JAMES C. BRANWELL, M.D.

MOUTH

Soden, W. von: The Association of Carcinoma of the Tongue and Syphilis (Ueber das Karzinom am Zungenkarzinom und Lues) 1933. Hamburg. Dissertation.

The large percentage of syphilitics among patients with cancer of the tongue is so noticeable that long ago the thought presented itself that there is a close relationship between the two diseases. The nature of the influence of syphilis on the development of cancer of the tongue has not been made clear in spite of the numerous investigations and treatises. Neither is it explained in this article.

The author merely cites the well-known facts that syphilis has a favorable influence on the development of cancer of the tongue and that in a large percentage of cases, cancer of the tongue originates in the leucoplakia developing under the favorable influence of syphilis. He bases his statements on the literature and the cases of twenty-two patients with cancer of the tongue, nearly half of whom were old syphilitics. GERTSCH (2)

NECK

Weasely, E.: The Treatment of Cervical Phlegmons (Therapie der Halsphlegmonen). *Nürn. Klin. Wochenschr.* 1933, 2, 1460.

The chief danger of cervical phlegmons lies in the peculiar anatomical relationships of the neck which favor direct propagation of the infection toward the mediastinum, the middle cranial fossa and the pulmonary circulatory system. The loose cellular tissue of the neck, divided into a retropharyngeal and a parapharyngeal space, forms a continuous route extending from the base of the skull through the entire extent of the neck to the posterior and anterior mediastinum. Theoretically this connective tissue space may become infected directly from any point in the pharynx or esophagus. Any part of the mouth may also serve as a portal of invasion of the connective tissue spaces of the neck when an infection has resulted in a phlegmon of the floor of the mouth. As the interstitial connective tissue spaces are not lymphatic routes in the anatomical sense, the infective process may spread more or less rapidly in various directions according to its virulence. It tends to travel through the tissue spaces following the vessels and nerves in the direction of least resistance. Another form of infection is propagated by way of abscessing lymph glands. This form as would be expected, is rather benign.

A third form of phlegmonous inflammation leads to invasion of the venous system. Thrombophlebitis and destruction of the vascular walls pave the way for bacterial invasion of the blood stream.

These three types of infection seldom occur in pure form. As a rule a combination of types is observed.

According to the site of the portal of invasion and the extent of the inflammatory process the following surgical procedures come up for consideration

1. Operation for a progressing cervical phlegmon. A skin incision is made along the anterior border of the sternocleidomastoid muscle and the vascular sheaths are exposed. The extent of the intervention depends upon the extent of the inflammatory process. Wide exposure of all infected connective tissue spaces and open drainage are indicated.

2. Collar mediastinotomy. This operation which was first performed by Hacker and was worked out further in the clinic of Chiari and Hajek by Marschik and Schlemmer serves for exposure of the connective tissue spaces of the neck as far as the jugulum and of the posterior mediastinum as far as the third dorsal vertebra.

3. Operations directed against the point of origin (a) external attack on the phlegmon of the floor of the mouth (b) opening of a retropharyngeal abscess from within (c) opening of the parapharyngeal space from within and (d) opening of the parapharyngeal space from without.

4. Local treatment of septic conditions. Thrombotic and demonstrably changed veins are ligated and resected with a wide margin of healthy tissue.

Exclusion of the focus of infection and prevention of further invasion of the blood stream will usually result in immediate improvement of the septic picture if the surgery is done in time. The incision must be sufficiently extensive. Drainage must be established from the deepest point when possible and must be adequate and reliable. Open wound treatment is, of course, essential. LORRA (Z)

Faschoud, H.: Cervical Cysts and Fistulae (Kystes cervicaux fistules cervicales). *Rev. méd. de la Suisse Rom.* 1934 p. 300.

The author reports four cases in which a branchial cyst or fistula was present. The first was that of a young woman who had a soft and fluctuating pear-shaped swelling in the right carotid region internal to the sternocleidomastoid muscle. Only the lower pole of the swelling could be felt; the upper part disappeared in the deep tissues of the middle carotid region. A fistula opened in the mass and infection occurred. Roentgen examination with lipiodol showed the tumor to be a branchial cyst extending up to the right tonsil. No difficulty was experienced at operation in spite of the proximity of the carotid and jugular vessels.

The second case was that of the father of the first patient. He had had a small fistula in the same region of the neck since childhood. Occasionally a few drops of liquid exuded from it but the fistula had never caused swelling or any other complaint. Roentgen examination with lipiodol showed it to be a branchial fistula 23 cm. long. As it had caused no inconvenience in the forty years it had been present

operation was not advised. The author does not believe that operation is warranted by the fear of malignant degeneration in such fistulae.

The third case was that of an elderly woman who presented a swelling in the cervical region which she had had punctured at first twice a year and recently once a year over a period of thirteen years. The fluid suggested a branchial cyst but the roentgenogram made with lipiodol was not absolutely characteristic. Operation was not advised as the patient was satisfied with her condition.

The fourth case was one of infected parotid dermoid cyst in a female dog which was operated upon.

The author discusses the embryology of the structures discussed and emphasizes the value of roentgen examination following the injection of lipiodol in their study. AUDREY GOSWAMI, M.D.

Briane, J., and Funck-Brentano, P.: Variations in the Arteries of the Thyroid Gland. A Study of the Surgical Anatomy (Les variations des artères du corps thyroïd. Etude d'anatomie chirurgicale). *Ann. d'anal. path.* 1934, xl, 125.

The blood supply of the thyroid gland shows frequent variations. Normally the superior thyroid artery arises from the external carotid, close to its origin, and reaches the thyroid at the upper pole. Variations in the site of its origin have been found and in rare cases the vessel is absent. As a rule the artery breaks up into three terminal branches with in the upper pole but as frequently the division takes place at a variable distance above the pole; one or more branches may escape the ligation when ligation is done at the pole. The antero-internal branch usually the principal one may come off higher than the others and descend in front of the sternothyroid muscle. Therefore to include all portions of the superior thyroid artery in a ligation with certainty the vessel should be ligated well above the superior pole close to the origin of the superior laryngeal branch.

The inferior thyroid artery is far more variable in size, origin, relations, and distribution than the superior thyroid artery. It is absent entirely in 10 per cent of cases. The incision made for its ligation should be sufficiently long to permit a search for the vessel. LEO M. ZIMMERMAN, M.D.

Gallino, M. M.: Roentgen Therapy of Hyperthyroidism (Röntgentherapie des Hyperthyroidismus). *Se. med. med.* 1934, xl, 345.

Following a discussion of the action of the roentgen rays on the normal and pathological thyroid and of the indications, contra-indications and results of roentgen therapy in hyperthyroidism, the author reviews the most important literature on this treatment of hyperthyroidism and reports 26 cases in which it was used.

Failure of roentgen therapy in hyperthyroidism is due to defective technique, insufficient treatment or incorrect selection of the cases. The method has precise limitations and is contra-indicated in subacute

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NECK

Wessely E.: The Treatment of Cervical Phlegmons (Therapie der Halsphlegmonen). *Wien M. N. Monatsschr.* 1933, **XX**, 460.

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SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS CRANIAL NERVES

Van Wageningen W P and Alrd R B: Dilatations of the Cavity of the Septum Pellucidum and Cavum Vergae *Am J Cancer* 1934, xx 539

The cavity of the septum pellucidum and the cavum vergae are embryologically one cavity and are located between the leaves of the septum pellucidum. It is presumed that in their development embryonic rests of pia arachnoid are included between their walls and that these may give rise to accumulations of fluid large enough to cause dilatation of the cavity.

The dilatations are of the following three types:

- 1 Non-communicating dilatations. In these, the walls are intact, the cavity being of the closed type.
- 2 Communicating dilatations. In these there is a communication between the cyst and the adjoining third or lateral ventricle due to rupture of the thin wall.

- 3 Secondary or acquired dilatations. In these, there is a communicating dilatation resulting from a superimposed hydrocephalus.

The diagnosis is rendered easy by encephalography which shows a filling defect high up between the lateral ventricles.

The symptoms caused by the dilatations include mental changes, headache, vomiting, palsies, epileptiform seizures, diplopia and disturbances of equilibrium.

The treatment is directed toward the establishment of a communication between the cavity and the adjoining lateral ventricle by operative means.

JONAS W EYRON M D

Hare C. C.: The Nitrite of Amyl Test for the Differentiation of Tumors of the Brain from Vascular and Chronic Inflammatory Lesions. A Preliminary Report *Bull Neurol Inst New York* 1934, lii 513

Having noted during the course of previous experiments that there was a difference in the height of the rise of the spinal fluid pressure caused by amyl nitrite inhalation in patients who had an intracranial neoplasm and those suffering from a vascular or a chronic inflammatory lesion of the brain, the author undertook the study reported in this article to determine whether the test might be of value in differentiating vascular and inflammatory disease from space-occupying lesions.

The test was applied in eighteen cases of tumor of the brain, twenty-two cases of vascular lesion, eighteen cases of chronic inflammatory disease and the cases of fifty patients without a pathological cerebral condition.

In 89 per cent of the cases of brain tumor the rise in the pressure was to a point above 320 mm. of fluid. In two cases the level was 260 and 270 mm. respectively. In 86 per cent of the cases of cerebral arteriosclerosis or marked vascular lesions and in 89 per cent of those of inflammatory lesions the rise was to less than the 320-mm level. In the majority of the control group of cases the rise occurred with about equal frequency to slightly above and slightly below the 320-mm level.

The author emphasizes that the rise in pressure from amyl nitrite inhalation bears no definite relation to the original pressure level. He explains the differences in the results of the inhalation in the conditions studied by the assumption that in vascular and inflammatory diseases the effect of the drug is limited and full dilatation of the intracranial blood vessels does not occur, whereas in cases of tumor of the brain there is little, if any interference with the dilatation of the intracranial blood vessels, the intracranial pressure being therefore increased.

He concludes that the amyl nitrite test for changes in the pressure of the cerebrospinal fluid is of value for the differentiation between expanding lesions and inflammatory or vascular diseases of the brain. He does not consider it of value as a method of differential diagnosis between pathological and normal conditions of the brain.

HALE HAVEM M D

Eisberg C. A., Dyke C. G. and Brewer E. D.: The Symptoms and Diagnosis of Extradural Cysts *Bull Neurol Inst New York* 1934, lii 393

Compression of the spinal cord by an intradural or extradural cyst is rare. Of 250 cases of tumors of the spinal cord, it was found in only 5. Two of the cysts causing compression were intradural and 3 were extradural. The 3 extradural cysts and an extradural cyst reported by Taylor are cited as proof that the diagnosis of extradural spinal cyst is possible. The cysts previously reported in the literature were either dermoid or echinococcus cysts. Most of them occurred in adults and were small. The extradural cysts reported by the authors occurred in adolescents, were large, and were neither dermoids nor of parasitic origin.

In 1 of the cases discussed by the authors the first symptoms were increasing spasticity and loss of power in the legs. In the 3 others the weakness began in one leg but soon involved the other. None of the patients complained of pain at first, and pain was never a prominent symptom. In 2 cases in which the symptoms had been present for nine months and three and a half years respectively there were disturbances of bladder and bowel function. Motor disturbances were predominant and sensory changes slight. In the 3 cases in which roentgenograms were

made the changes were almost identical, involving respectively 3, 4, and 5 vertebrae. The pedicles of the affected vertebrae were greatly narrowed and atrophied, and the interspedicular spaces much enlarged. The enlargement of the vertebral canal was so marked that after removal of the cyst at operation the sheaths of the nerve roots of each side were exposed for a distance of more than 1 cm. In all 4 cases the cyst lay mainly under the arches of the sixth, seventh, and eighth thoracic vertebrae. The fact that the cysts were not adherent to the dura except at a small area at or near the exit of a nerve root suggested that cysts of this type may have their origin in a congenital diverticulum of the dura mater or herniation of the arachnoid through a congenital defect in the dura. In 1 case there was apparently a patent opening at the neck of the sac.

The typical case of compression of the spinal cord by an extradural cyst is as follows:

The patient is an adolescent with the history and symptoms of a progressive spastic paraplegia. Pain is absent or not prominent. The objective sensory disturbances are slight, and their upper level is in the midthoracic region, usually at the sixth or seventh thoracic dermatome. Manometric tests demonstrate a subarachnoid block with the characteristic spinal fluid changes of cord compression. Measurements on anteroposterior roentgenograms show enlargement of the interspedicular spaces of 3 or more vertebrae somewhere between the fourth and tenth thoracic vertebrae. The pedicles of the affected vertebrae especially those of the sixth, seventh, and eighth, are narrowed and atrophic.

E. S. PLATT, M.D.

Ruecker, S.: The Surgical Treatment of Facial Paralysis (Die chirurgische Behandlung der Facialislähmung). 1933. Kiel, Dissertation.

The numerous methods of treating peripheral facial paralysis are presented in detail and their results are critically evaluated and compared. In traumatic paralysis an attempt should be made to suture the nerve as early as possible. When complete severance of the nerve has not occurred most surgeons wait from three to six months. During this time the facial musculature should be massaged and treated by galvanization to prevent atrophy. Two years is considered the maximum length of time during which union may be attempted. In injuries of the bony canal, neurinoma has succeeded in a few cases (Ney, Alexander, Kuesamell). Suture in the region of the bony canal is superfluous as the canal itself acts as a siphon. Bridging of the defect by the transplantation of a piece of nerve tissue has been successful in a few instances. Nerve plastics have been accomplished by anastomosis with the hypoglossus or the accessory nerve. In spite of a few good results the final results in most cases are unsatisfactory on account of associated movements or paralysis. In the use of suspension methods there is no hope of restoring function in the nerve, the purpose being only to obtain a cosmetic result by fixation with transplanted strips of fascia.

Sympathectomy in the neck, by producing the Horner syndrome (ptosis, sinking of the eyeball) should permit closure of the eyelids and thereby overcome the lagophthalmos. It should have some influence also on the paralyzed cheek muscles. By far the most satisfactory results have been obtained by neurotization of the paralyzed muscles by myoplasty. Pedicled flaps of the masseter and temporal muscles are joined to the orbicularis oris and oculi. The simplest method today is perhaps that of Lever. In some cases, this has been followed by active movements after from four to six weeks. The advantage of muscular neurotization over all other methods is due to the resulting motor re-activation of the facial muscles without interference with the function of other muscles.

TOORNS (Z)

Greenfield, S. D.: The Etiology and Pathology of Paralysis of the Abducens Nerve Associated with Sinus Thrombophlebitis. Report of a Case of Thrombosis of the Lateral Sinus and Bilateral Paralysis of the Abducens Nerve; Operation and Recovery. *Arch. Otolaryngol.* 1934, vol. 139.

The author reports a case of bilateral paralysis of the abducens nerve subsequent to thrombosis of the right lateral sinus. The thrombus extended from the torculus down the sinus and jugular vein to a point near the region of the clavicle. The patient recovered following ligation and excision of the jugular vein and opening of the lateral sinus with removal of the thrombus from the latter. In the author's opinion, the clinical course and termination ruled out the presence of disease of the petrosus as a factor in the production of the abducens palsy.

Greenfield presents a very detailed description of the anatomy of the related parts in such a condition. The relation of the superior and inferior petrosal sinuses to the lateral sinus and the cavernous system and the close application of the abducens nerves in their long intracranial course to the dura and related structures make evident the mechanism of involvement in such inflammatory and thrombotic processes.

The author says: "With such an advanced process as was demonstrated at operation in the case reported in this paper, one is justified in concluding that the thrombus must have also extended into both petrosal sinuses. The absence of bleeding after the removal of the conguila from the interior of the lateral sinus tends to confirm this opinion. Thus, with such a long-standing process as this evidently was, the edema that resulted from the complete blockage of the cavernous system on the diseased side being supplemented by the edema which occurred incidental to the phlebitis and periphlebitis of both petrosal sinuses, the dura in the entire area must have shared in the inflammatory reaction. As has been pointed out, the close proximity of both abducens nerves to the affected area was responsible for the bilateral involvement."

HALE HAYES, M.D.

SPINAL CORD AND ITS COVERINGS

Elisberg, C. A. and Dyke, C. G.: The Diagnosis and Localization of Tumors of the Spinal Cord by Means of Measurements Made on X-Ray Films of the Vertebrae, and the Correlation of Clinical and X-Ray Findings. *Bull. Neurological Inst. New York* 1934, 11: 359.

Tumors of the spinal cord produce a localized rise of intraspinal pressure and in many cases resulting changes in the bony walls of the vertebral canal. Recognition of the finer changes in the roentgenograms requires measurement of the interpedicular spaces. Reliance cannot be placed solely on inspection of the roentgenogram.

A study of a series of normal spines showed that in anteroposterior roentgenograms the inner borders of the pedicles are usually convex. However pedicles with flat inner borders were seen in all parts of the spine, and pedicles with concave inner borders were sometimes seen below the seventh thoracic vertebra. Accurate measurements can be made from the fifth cervical to the fifth lumbar vertebrae. The interpedicular space increases in size from the second to the fifth cervical vertebra, decreases again to the second thoracic, decreases more gradually to the fifth and remains constant to the ninth thoracic vertebra. It then increases again from the tenth thoracic to the fifth lumbar vertebrae. Not uncommonly the spaces of several vertebrae are of the same size in areas normally showing a gradual increase or decrease.

Enlargement of the canal was found in 42 per cent of sixty seven cases of tumor of the spinal cord and in 70 per cent of twenty cases of tumor between the tenth thoracic and the fifth lumbar vertebrae. The enlargement was recognizable only on measurement. Of the cases of extramedullary tumor the enlargement was found in 18 per cent of those growths in the cervical and upper thoracic vertebrae, in 18 per cent of those growths between the fourth and ninth thoracic vertebrae, and in 60 per cent of those growths below the ninth thoracic vertebra. Of the cases of extradural tumor the increase in size of the vertebral canal occurred in 74 per cent. In the mid thoracic region a pathological increase in the size of the vertebral canal was much more frequent in cases of extradural than in cases of intradural expanding lesions.

In the region where normally the canal remains the same size or becomes larger (between the fifth thoracic and the fifth lumbar vertebrae) a decrease of 3 mm. or more in the interpedicular space of a vertebra as compared with the vertebra just above should suggest the presence of a pathological process in the vertebral canal at the level of the upper vertebra, which has produced an enlargement of the interpedicular space of that vertebra. Small growths produce an enlargement of the intervertebral spaces of one or two vertebrae while large growths involve three or more vertebrae. In the thoracic region involvement of three or more vertebrae indicated an extradural or intradural cyst or more rarely a

lipoma or a large venous angioma while in the lumbar region it indicated either an extradural growth or a giant tumor of the cauda equina.

The X-ray findings must always be correlated with the clinical signs. If roentgen examination demonstrates an enlargement of the interpedicular space at a considerably lower level than that indicated by the clinical signs the conclusion must be drawn that the disease process is extensive or involves several parts of the spinal cord. In the absence of other evidences of multiple metastatic lesions or of congenital anomalies of the vertebrae the condition is probably one of varicosities of the spinal blood vessels. In correlation with the clinical signs and symptoms, the presence of enlargement of the interpedicular spaces often allows a probable diagnosis of the pathological condition.

E. S. PLATT, M.D.

Harkins, H. N.: The Use of Iodized Poppy Seed Oil in the Differential Diagnosis Between Tumors of the Conus Medullaris and of the Cauda Equina. *Arch. Neurol. & Psychiat.* 1934, 43: 483.

The author reports four cases which demonstrate the difficulties encountered in the differential diagnosis between tumors of the conus medullaris and cauda equina. One and one-half cubic centimeters of iodized poppy seed oil were injected by lumbar puncture in three of the cases and by caudal puncture in one case for diagnostic purposes. The iodized poppy seed oil proved to be of value in localizing a block and determining the site of the lesion.

In reviewing the numerous objections raised to the use of iodized poppy seed oil for this purpose, the author states that he failed to find any direct evidence of injury in the four cases reported. Although iodized poppy seed oil has been proved mildly irritating when injected into the spinal canal, Harkins believes its use is justifiable for accurate determination of the level of a tumor in the lumbosacral canal.

ROBERT ZOLLINGER, M.D.

Payton, W. T.: The Effect of Radium on the Spinal Cord. *Am. J. Cancer* 1934, 42: 558.

The effects of radium on the spinal cord were studied by the author in several dogs. It was found that radium placed in the meninges and in the cord proper evoked serious reactions. The smaller doses produced a marked meningeal reaction over a circumscribed area at the site of the implantation which was characterized by infiltration with leucocytes, nerve-cell injury and marked glial cell proliferation. The larger doses caused nerve-cell destruction, myelin degeneration, hemorrhages, fragmentation of the gray matter and focal necrosis of the white matter. The maximum dose of radium that could be placed extradurally without producing paralysis was 1 mc. Larger doses produced paralysis sooner or later.

Payton reports two cases of plasma-cell myeloma in which the lesions were single and located in the spine and gave rise to neurological symptoms. In

one case radium needles were implanted into the tumor at operation, a total dose of 1,300 mgm.-hrs with a 0.5 mm. nickel-steel filter being given and this treatment was supplemented by deep X-ray therapy. For eighteen and a half months thereafter examination disclosed no evidence of skeletal metastases, but at the end of forty-one months generalized skeletal metastases were found. In the other case only X-ray therapy was used and the patient survived only fifteen months after operation performed to determine the nature of the tumor. The two cases are reported to compare the results obtained with and without radium therapy.

JOHN W. EMMETT, M.D.

Cooper M. J.: Lymphogranulomatosis Maligna (Hodgkin's Disease) with Invasion of the Spinal Canal and Paraplegia. *J. Am. M. Ass.* 914, 1917.

In the case reported the tumor found at autopsy was both extradural and subdural. The cord substance was the site of myelopathic changes consisting of well-marked vacuolation of the white matter, extensive swelling and disintegration of the axons, and less conspicuous degeneration of the gray matter. Many of the ganglion cells were in various stages of degeneration of the character of ischemic degeneration and acute swelling. The vessels within the cord substance as well as those of the extramedullary plexus were greatly congested and the vessels accompanying the intradural portions of the nerve roots were distinctly dilated and congested. The whole picture strongly suggested that interruption of the blood supply of the cord as a result of compression of the spinal branches of the vertebral, ascending, and deep cervical and intercostal arteries had played an important part in the production of the acute paraplegic symptoms. The tumor mass did not infiltrate the substance of the cord proper.

On the basis of the changes found in this case and those noted in similar cases by others, the author draws the following conclusions:

The nerve roots afford a route by which lymphogranulomatous tissue may reach the subdural space. The spinal dura mater is more resistant to penetration than the septa of the nerve roots. Paraplegic symptoms may result not only from direct cord compression, but also from obstruction to the circulation of the cord due to compression or invasion of the vessels accompanying the nerve roots.

DAVID JOHN LAMARTINO, M.D.

PERIPHERAL NERVES

Gordjian, E. S., and Goetz, A. G.: Radial Paralysis Complicating Fracture and Dislocation of the Upper Limb. *Ann. Surg.* 1934, 50, 487.

Fifteen cases of palsy of the radial nerve associated with fracture and dislocation of the humerus are reported. All were treated surgically. In those in which the nerve lesion was repaired within three months after the injury the period of disability

was approximately six months, whereas in those in which it was not repaired until three months or more after the injury the period of disability was one year or longer.

The authors recommend early operation in primary palsy of the radial nerve, and emphasize the importance of neurological examination immediately after the accident.

O. W. JONES, JR., M.D.

Devie, L., and Cleveland D. A.: Experimental Studies in Nerve Transplants. *Ann. Surg.* 1934, 59, 271.

The authors state that during the development of the surgical treatment of peripheral nerve injuries many methods of surgical repair have been described, but the procedure of choice is, of course, direct end-to-end suture. They then review the various methods employed to bridge a large defect in the nerve in which end-to-end suture is impossible. They state that, in general, nerve grafting has yielded unsatisfactory results.

In a series of experiments carried out by the authors on dogs, a section of the sciatic nerve 3 or 7 cm. in length was removed and the removed section immediately sutured in place as an autogenous graft. In some of the experiments the graft was reversed end for end. After varying periods of time the nerve was re-exposed and sections were taken from both the proximal and the distal bases of suture for microscopic examination. The sections removed from the distal suture line showed that fibrous tissue played an important role in preventing downgrowth of the neurones. When the transplant measured 7 cm. in length the connective tissue formed an almost complete barrier to the neurones. The authors draw the following conclusions:

1. In nerve transplants the scar formed at the line of suture between the distal end of the transplant and the end of the distal segment of the peripheral nerve may act as an impenetrable barrier to the downgrowing axons.

2. Resection of the distal scar and resuture of the distal end of the transplant and the end of the distal segment of the peripheral nerve may allow continuation of the growth of the neurones into the distal segment of the nerve.

3. Neurones may grow through a nerve transplant 3 cm. in length to reach the distal line of suture at the end of from sixty to seventy days.

O. W. JONES, JR., M.D.

SYMPATHETIC NERVES

Telford, E. D.: Sympathectomy. *La. Med.* 1934, 27, 444.

Sympathectomy or cord ganglionectomy is performed in the lumbar or cervical region. In the former the lumbar sympathetic cord together with the second, third, and fourth ganglia are excised. In the latter sectioning of the cervical sympathetic cord is done below the second cervical ganglion and carried down to include the stellate ganglion.

The author who has performed 100 sympathectomies, reports the results in the various conditions as follows

In thrombo-angitis obliterans the results are good when the operation is done in the earlier stages and the patient is young

In Raynaud's disease the results of the operation in the upper and lower extremities show considerable discrepancy. In the lower extremities the results of bilateral sympathectomy are always good. In the upper extremities they are less consistent

In acrocyanosis, excellent results have been obtained by bilateral lumbar sympathectomy

In poliomyelitis, the affected extremities are cold, blue, and prone to chilblains and chronic ulcers. Bilateral sympathectomy to relieve these conditions has given satisfactory results

In Hirschsprung's disease sympathectomy gives excellent results in children, but in adults the results are usually poor

In constipation, good results are obtained

In hyperhidrosis in which excessive sweating causes pathological changes, the results are very good.

In cases of scleroderma and sclerodactyly the results have not been good, but some improvement has been obtained in operations for the lower extremities

DAVID JORIN IMPASTATO M.D.

Springer F. A. C.: Further Experience in the Relief of Pain by Section of the Rami Communicantes and Ganglionated Sympathetic Cord. *Ann Surg* 1934, xlix 384

In certain cases of abdominal pain for which no organic cause can be found the pain can be relieved by section of the white rami communicantes of the sympathetic system. Pain of this type is accompanied by definite areas of hyperesthesia which follow the outlines of the zones of Head.

Before performing the operation the author carries out a physiological test, blocking the sympathetic by the injection of a 1:1,500 solution of nupercain. If the pain and the area of hyperesthesia are relieved by this procedure he concludes that section of the white rami communicantes will be beneficial. The sympathetic cord is then exposed and complete removal of the cord is done in the immediate region of the pain, with section of the white rami communicantes above and below

Four cases treated in this manner are reported. In two, which were operated upon in 1926 and 1927 the relief has persisted to date. In the two others which were operated upon more recently similar good results were obtained but there has been some persistent pain due it is believed to sectioning of the ribs to obtain an approach to the sympathetic cord.

JOHN W. EPTON M.D.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Schwartz, H. W.: The Lymphatic System in Relation to Recurrent Laryngeal Nerve Paralysis Secondary to Cancer of the Breast. *J. Laryngol. & Otol.* 1934, xlv, 2.

Following the report of a case of paralysis of the recurrent laryngeal nerve secondary to cancer of the breast and a review of sixteen cases previously reported, the author discusses this condition and the route of metastasis of cancer of the breast from the standpoint of more recently acquired knowledge of the anatomy of the lymphatic drainage of the breast.

J. THORACIC WALL WITHERSPOOK, M.D.

Muir, R. and Aitkenhead, A. C.: The Healing of Intra Duct Carcinoma of the Mammary. *J. Path. & Bacteriol.* 1934, xxxviii, 7.

The term *intra duct carcinoma* as used in this article indicates a malignant proliferation of epithelial cells with the anaplastic characteristics of carcinoma cells within the normal boundaries of the ducts of the breast.

Two cases of Paget's disease of the nipple are reported. The first was that of a woman sixty nine years of age who for seven years had had a crust on the left nipple which was itchy, tender, reddened, and painful. The nipple gradually disappeared and was replaced by a raw and tender area which slowly increased in size until it was 1 1/2 in. in diameter. The central part of the breast was slightly indurated. No regional lymphadenopathy was present. The second case was that of a woman fifty four years of age who for three years had had a reddened and excoriated nipple with an intermittent discharge. The nipple was stiff and lifted off like a coin. There was no induration or deformity beneath it.

The findings of microscopic examination of these breasts are described in detail. In the more superficial areas the ducts were completely obliterated and there was no trace of epithelial elements. A duct was represented by a central core of hyaline connective tissue surrounded by elastic tissue which had undergone great hypertrophy. At deeper levels there was a distinct carcinoma accompanied by round-cell infiltration. Deeper still, the malignant growth increased and almost filled the lumen. Thus the changes were an increase of the connective tissue and collagen fibers accompanied by gradual atrophy and disappearance of the carcinoma cells. The final stage was complete obliteration in which the duct was represented by a central core of connective tissue surrounded by hypertrophied elastic tissue and all traces of epithelium had disappeared.

These changes were observed mainly in the ducts in the deeper part of the nipple and in the underlying

area but were present to a lesser extent in the substance of the breast itself.

J. DUNCAN WILLIAMS, M.D.

TRACHEA, LUNGS AND PLEURA

Lindskog, G. E., and Bradshaw, H. H.: Re-Inflation of the Atelectatic Lung. *J. Thoracic Surg.* 1934, vii, 333.

For re-inflation of atelectatic lung tissue the cohesion of the alveolar walls lying in close contact must be overcome. Other forces acting against re-inflation are the adhesive effect of evadate and the resistance to expansion offered by the natural elasticity of the parenchyma of the lung.

To determine the negative pressure that must be applied to the pleural surfaces of the lung and the differential positive pressure which must be exerted in the bronchial lumen of the atelectatic lung for re-inflation the authors performed experiments upon dogs, cats, rabbits, and stillborn human fetuses.

They found that there is a threshold differential pressure for the re-inflation of atelectasis. This pressure is from 12 to 16 cm. of water. If it is not reached or is exceeded, re-inflation does not occur. In chronic atelectasis which has been present up to twenty-six days, the threshold differential pressure is raised only slightly (3 cm.).

The type of anesthetic used (nembutal given intraperitoneally or ether) had no apparent effect on the threshold differential pressure.

The authors propose the use of positive pressure in prophylactic or therapeutic inhalations for the combating of atelectasis. J. DUNCAN WILLIAMS, M.D.

Lieberman, L. M. and Leopold, S. S.: Therapeutic Pneumothorax in Experimental Lobar Pneumonia in Dogs. *Am. J. M. Sc.* 1934, clxxviii, 315.

Therapeutic pneumothorax on the affected side in lobar pneumonia has been used in Europe since 1911. Fifty cases have been reported. Forty-seven of the patients recovered and three died. The induction of the pneumothorax is said to be followed by immediate amelioration of all of the distressing symptoms and the initiation of a series of events indistinguishable from a spontaneous crisis. The improvement is only temporary unless the compression is maintained. As the absorptive power is increased in lobar pneumonia, a refill is necessary every twelve to eighteen hours.

In order to corroborate these remarkable results experimentally the authors produced lobar pneumonia in thirty-six dogs by the bronchoscopic instillation into the lung of virulent broth cultures of *Pneumococci* 1 and 3. Fourteen of the dogs developed a positive blood-stream infection during life and

In 2 others the heart blood was found positive at necropsy. Of the five dogs recovering without treatment only one had a positive blood-stream infection. Of the eighteen given artificial pneumothorax therapy, fifteen recovered and three died. The initial injection was given on the second day and was usually followed by marked improvement with a drop in the temperature and leucocyte count. Respiration became easier and more normal, and the dogs recovered sufficiently to walk and eat. A second and last instillation was made on the second day. This constituted the only treatment. The blood culture was usually negative or greatly reduced by the second day. Of the three dogs that died in spite of treatment, one was found to have an acute hemorrhagic enteritis which the authors believe was not related to the pneumonia. Of the 18 dogs given no treatment, 13 died and 5 recovered.

In conclusion the authors warn against the indiscriminate induction of artificial pneumothorax in lobar pneumonia. They offer no explanation of the *modus operandi* of this type of treatment. They believe that the clinical reports and their experimental data warrant its use in selected cases.

Appended to the article is the report of a case in which 400 c cm. of air were injected on the third day of a lobar pneumonia in a man forty four years of age. Two days later a second injection of 400 c cm. was given. The patient became entirely comfortable within seven hours after the initial injection and remained so. The sputum showed pneumococci of Type 1 while blood cultures were negative. The injection was followed by a profuse perspiration and a prompt fall in temperature from 101.8 to 99 degrees F. The patient made an uneventful recovery.

WILLIAM C. BECK, M.D.

Alexander, J. Suprapleural and Subcostal Pneumolysis with Filling of Pectoral Muscles
Arch Surg 1934 XLVIII 538

The classical extrapleural pneumolysis consists of resection of a portion of a rib anteriorly or posteriorly, splitting of the deep perosteum, manual separation of the parietal pleura from the ribs and intercostal muscles, and filling of the extrapleural space thus created with paraffin, masses of fat, gauze, air a rubber dam an inflatable rubber bag or the pectoral muscles.

Suprapleural and subcostal pneumolysis with filling of pectoral muscles may be defined as freeing of the anterolateral portions of the upper ribs from their periosteum and intercostal muscles and tucking of the pedicled pectoral muscles between the bared ribs externally and the perosteal intercostal muscles, pleura and lung internally.

This operation is indicated chiefly for cavernous tuberculous or non-tuberculous lesions situated between the clavicle and the level of the third rib anteriorly.

The disadvantages and dangers of creating for the pectoral muscles a space that lies directly on the parietal pleura prompted the author more than six

years ago to devise the operation reported in this article. The technique is described in detail.

The chief advantages of suprapleural and subcostal pneumolysis may be summarized as follows:

1. The procedure is simpler than other methods of using the pectoral muscles as a filling after pneumolysis.

2. As the lung may be freed from the ribs as widely as desired its collapse is not dependent upon the absence of tough extrapleural adhesions which not rarely prevent an adequate pulmonary collapse in extrapleural pneumolysis.

3. As the pleura is not even exposed there is virtually no danger of wounding the pleura and lung. The operation may therefore be performed safely in the presence of partial pneumothorax.

4. As no rib is resected, the filling is efficiently retained and there is little interference with the mechanism of expectoration which is important in the prevention of stasis pneumonia.

5. The periosteum of the bared ribs is pushed deep into the thorax, and within approximately six weeks it presumably forms new ribs which tend to maintain the lung in the collapsed position even though the muscles atrophy.

Relatively few patients are suitable for this operation. Since 1927 the operation has been done by the author on only seven of many hundreds of patients operated upon for tuberculous or non-tuberculous suppurative disease of the lungs. Six of the seven patients were tuberculous. In the cases of three of the six, the operation was done preliminary to thoracoplasty in order to displace a large cavity backward so that the thoracoplasty would have a better chance of closing it completely. In all three cases this expectation was apparently met. One of the three remaining tuberculous patients died as a result of the operation. There were also two other deaths in the seven cases. The seventh patient, who had a foul non-tuberculous abscess of nineteen months duration, was apparently cured.

In conclusion the author says that the operation described is a form of collapse therapy for cavernous tuberculous or non-tuberculous pulmonary suppuration, the indications for which are much the same as those for the classical extrapleural pneumolysis.

ELLA M. SALLIOWEN

Gale, J. W.: Factors Influencing the Safety and Efficiency of Thoracoplasty. *J Thoracic Surg* 1934, III 303

Clinical study of a limited number of cases indicates that the prone position is of definite advantage in extrapleural paravertebral thoracoplasty.

According to the author's experience, thoracoplasty is performed best under anesthesia induced by the nitrous oxide-ethylene sequence.

Pericostal sutures employed during the second and third stages of a thoracoplasty are of value to reduce the transverse diameter of the hemithorax as a unit and prevent paradoxical breathing in patients with a very thin pleura.

The use of intrapharyngeal oxygen is recommended as a routine measure following thoracoplasty. It guards against anoxemia which, if not treated, will draw heavily upon the patient's reserve.

The use of blood transfusion before and between operative stages is a very effective therapeutic measure.

If wound infection occurs it should be treated by early adequate drainage as otherwise the purpose of the operation may be defeated.

SAMUEL KARY, M.D.

Walzel, P.: Lung Tumors, Including Mediastinal Tumors and Tumors of the Chest Wall Extending into the Lungs (Lungentumoren mit Einschluß von auf die Lunge übergreifenden Mediastinaltumoren und Thoraxwandgeschwüsten). *Beitr. z. klin. Chir.* 1933, cviii, 645.

This synopsis of the seasonal activities of the Southeastern German Surgical Association at Breslau stresses especially personally observed cases and knowledge gained therefrom. It contains a brief review of only the most recent contributions to the voluminous casuistic literature.

Lung tumors with a benign structure are better known to the pathologists than to surgeons as surgeons see them less frequently. Benign connective tissue tumors, fibromata, lipomata, and chondromata are seldom recognized during life and operated upon successfully (cases of Sauerbruch and Klages).

Recently special attention has been directed to cysts of the lungs. These cysts are formed as the result of constriction of a part of the bronchial tree. They are lined with bronchial mucous membrane and grow as the result of the production of mucus in their lumina. Aseptic cysts have been successfully removed or merely incised (Eiselsberg, Sauerbruch, Clairmont, Fromme). Suppurating cysts are incised and drained like an empyema according to the method of Burelau. A case of suppurating cyst which was operated upon by Walzel is reported in detail.

The dermoid cysts and teratomata occur most frequently in the anterior mediastinum, but are classified as lung tumors because of their location. In 1917 Stich collected about 100 cases in which operation was done with a mortality of about 50 per cent. Walzel operated on 3 of his own cases.

The intrathoracic neurofibromata and the ganglioneuromata are to be classified as such only when they are accompanied by the general symptoms of von Recklinghausen's disease. Walzel removed an intrathoracic cystic structure so diagnosed, but found it to be the sac of a meningocele associated with spina bifida.

Thoracic lipomata with an intrathoracic and extrathoracic development have been discussed in detail by Walzel in another report.

The increasing frequency of malignant lung tumors is confirmed by the statistics of the pathological institutes of Vienna and Dresden. The immediate results of operative treatment of lung carcinoma are encouraging, but recurrences are very frequent.

Walzel has operated 5 times for the removal of a carcinoma of the lung. He emphasizes the importance of performing the operation in 3 stages.

True sarcomata of the lungs are very rare. They arise as a rule from the chest wall and involve the lung secondarily. Walzel has operated upon 3 such cases.

In conclusion echinococcus cysts of the lung are discussed. In the author's material they are very rare. Two cases were operated upon with excellent results.

FRIEDRICH KLAGES, (Z)

Bryce, A. G.: A Contribution to the Study of Pulmonary Lobectomy. *Brit. J. Surg.* 1934, xii, 560.

The author reports experiments which demonstrated that animals are able to survive with a mass of dead tissue in the pleural cavity. This finding suggests that it may be possible to remove a densely adherent lung by cutting off its blood supply, allowing it to atrophy, and deferring removal of the dead lung until it had separated by the formation of a line of demarcation between it and its surroundings.

SAMUEL KARY, M.D.

Chirurco, C. A.: A New Procedure for Pulmonary Resection, the Bellucci-Chirurco Method (Nuo-vo processo di resezione polmonare Bellucci-Chirurco). *Clin. chir.* 1933, iv, 1936.

Chirurco describes a method for pulmonary resection based on exteriorization such as was done by Burel in the case of the liver and by Taddai in the case of the spleen. He resected the lung by this method in dogs and rabbits. Through a costal incision, with or without rib resection, the lung was delivered from the thoracic cavity and the edges of the wound were closed against it. A Nelaton rubber tube was applied along each side of the base of the lung and figure-of-eight sutures were passed through the lung tissue above and below the constrictor to bring the wound edges together and effect haemostasis. The lung was then resected. As a rule the wound healed by primary intention. In animals sacrificed a year after the operation firm adhesions were found between the remaining lung tissue and the chest wall.

This method is simple, prevents haemorrhage and contamination of the pleural cavity and is well tolerated by animals.

PETER A. ROSE, M.D.

HEART AND PERICARDIUM

Bigger, I. A., and Porter, W. B.: Wounds of the Heart. *Internat. Clin.*, 1934, i, 133.

Following a brief review of the history of wounds of the heart, the author discusses their pathological physiology to explain the symptoms and thereby aid the surgeon in making an early differential diagnosis. He emphasizes that if death is to be prevented, auricular tamponade secondary to the sudden development of haemopericardium must be promptly recognized and relieved. The surface wound is trifling and insignificant haemorrhage appears ex-

ternally, yet it may prove rapidly fatal. The blood is retained in the pericardial sac, for rarely is the chest wound sufficiently patent to allow free escape of blood and a communication with the pleural cavity infrequently exists.

The injury is followed after a few minutes by a mortal pallor which is associated with engorgement of the jugular vein a picture definitely indicating collapse of the circulation from auricular tamponade. The entire picture resembles that of traumatic shock and hemorrhage but most of the symptoms and clinical phenomena are secondary to failure in the greater circulation from imperfect ventricular filling.

The relationship between the pain in angina pectoris and myocardial wounds is explained on the basis of cases treated by the author and cases cited from the literature.

Data of importance in the interpretation of electrocardiograms are presented.

The discussion of the treatment includes the choice of anesthetic, the operative technique the technique of suture, and the postoperative care.

Seven cases are reported with electrocardiograms schematic sketches showing the lesions drawings, and photographs. **SAMUEL J. FOOTE, M.D.**

Arena, R. A. and Stewart E.: Pneumopericardium Following a Foreign Body in the Oesophagus. Radiology 1934, xxi, 334.

Forty nine cases of pneumopericardium have been reported in the literature since the condition was described by Bricheteau in 1844. In a few of the cases the condition was the result of gas production from infected pericardial fluid. Only four cases of pneumopericardium resulting from foreign bodies in the oesophagus have been reported. In the majority of the cases the condition was due to traumatic perforation of the pericardium from within or from without perforation into the pericardium from a neighboring organ, or perforation of a diseased pericardium into a neighboring organ.

The authors case was that of an infant eighteen months old. The child had been well until five months before admission to the hospital, when there was bleeding from the bowel for a day followed by tarry stools. A month later bright red blood was passed with the stool. At this time the baby presented clinical signs of severe hemorrhage. At the time of its admission to the hospital it had had a cough for five days.

A roentgenogram of the chest was taken because pneumonia was suspected. This revealed a pneumopericardium and an open safety pin lying in the oesophagus between the seventh and tenth ribs posteriorly. An attempt to dislodge the pin with the aid of an oesophagoscope was unsuccessful.

The child died five days after its admission to the hospital. The clinical diagnosis was confirmed by postmortem examination.

Two outstanding symptoms of pneumopericardium are precordial pain and attacks of dyspnoea.

On percussion normal pericardial dullness is replaced by a shifting area of tympany over the precordium. The heart sounds are diminished. The roentgenogram yields the most positive findings and confirms the diagnosis. **EARL O. LAMMER, M.D.**

Paezler, H. W.: The Origin and Treatment of Adhesive Pericarditis (Zur Entstehung und Behandlung der schwelligen Perikarditis). Deutsche Zeitschrift für Chirurgie 1933 cxxii, 339.

Adhesive pericarditis causes interference with the blood flow to the venae cavae leading to ascites and cirrhosis of the liver. Operation for this condition was first advised by the internist, Delorme in 1893 and next by Brause, in 1902. Brause called his operation cardiolytic as he made a window in the bony chest wall to permit expansion of the heart during systole. However this operation was successful in only a small number of the cases. The liberation of intrapericardial adhesions advised by Delorme and Volhard was achieved first by Hallopin in 1910 and then by Delagenière in 1911 and by Rehm in 1912. The first successful resection of a portion of adherent pericardium was done by Sauerbruch in 1913. Schmieden then performed it four ten times. To date, seventy-one cases have been operated upon.

In Paezler's opinion, the grouping of various operative techniques for pericarditis suggested in 1932 by Lenormant is not feasible. According to Schmieden, pericardiectomy (decortication) is the surest method in most cases. Only when the symptoms are due chiefly to adhesions between the diaphragm and the mediastinum on one side and the pericardium on the other can fenestration of the chest wall or phrenectomy lead to the desired results. The author summarizes the operative results in nineteen cases treated at the Frankfurt Clinic, five treated at the Laewen Clinic, and forty-seven reported in the literature. The late results are poorer than the immediate results. This is shown by tables. In some cases the improvement or recovery becomes questionable after several years. The relapse is due not to recurrence of the pericarditis, but to the underlying disease, namely the rheumatic infection of which the pericarditis was only a manifestation.

According to the material of the Pathological Institute of Leipzig seven tenths of the cases of pericardial adhesions are caused by rheumatism and only one-tenth by tuberculosis. Paezler discusses the pathological and clinical manifestations of rheumatism and emphasizes the view of Roessle and Tallauf based on the pathological studies of Aschoff and Klinge, that rheumatism has lost its indefinite character and has become, to a certain extent an anatomically definite disease.

Of the nineteen cases treated at the Frankfurt Clinic ten were due to rheumatism two to tuberculosis and seven to an unknown cause. Of five cases treated at the Koenigsberg Clinic one was due to rheumatism one was due to tuberculosis, and three were due to an unknown cause. Of the forty seven

cases reported in the literature fifteen were due to rheumatism, eleven to tuberculosis, and nineteen to an unknown cause. Paesscher emphasizes that in all cases of adhesive pericarditis, the operative treatment must include the removal of foci of infection such as the tonsils. He reports four cases in which the favorable initial effects of pericardiectomy were maintained for a longer time by tonsillectomy.

Case reports from the Frankfurt and Koenigsberg Clinics and the world literature are presented.

FRANK (Z)

ESOPHAGUS AND MEDIASTINUM

Hurst, A. F.: Some Disorders of the Esophagus. *J Am M Ass* 1934, cv, 582.

The author discusses four esophageal syndromes which are still insufficiently recognized.

The dysphagia of anemic women is a syndrome occurring only in middle age. The anemia is of the hypochromic microcytic type. As a rule it is associated with achlorhydria or hypochlorhydria, and occasionally in severe cases, with splenomegaly. Atrophic glossitis is present constantly and this condition of the mucous membrane extends to the pharyngo-esophageal junction. The dysphagia is due to a disturbance of the neuromuscular mechanism. When food is propelled by the tongue into the pharynx under normal conditions the normally closed pharyngo-esophageal sphincter formed by the cricopharyngeus muscle relaxes, but in the condition under discussion this relaxation does not occur and in some cases a spasm may result.

The anemia can be cured by the administration of 3 gm. of iron and ammonium citrate three times a day after meals and the glossitis improved by the administration of liver extract. The dysphagia can be cured by passing mercury bougies of increasing diameter. In cases in which spasm and not achalasia is present, considerable difficulty may be occasionally experienced in passing the instrument.

Achalasia of the cardiac sphincter (so-called cardiospasm) is a syndrome characterized by enormous dilatation and hypertrophy of the esophagus without hypertrophy of the cardiac sphincter which does not relax normally when a peristaltic wave reaches it thus supporting an 8-in. column of water or food at all times and allowing only an excess of liquid or food over the 8-in. column to enter the stomach through the sphincter. Because of the normal closure of the pharyngo-esophageal sphincter there is no regurgitation of liquids.

As the cardiac sphincter has never been found hypertrophied in this condition, the old name "cardiospasm" is not applicable. Consequently the author asked Sir Cooper Perry to invent a synonym for "absence of relaxation of the cardiac sphincter" he suggested the combination achalasia derived from a absence of and *chlasis* relaxation.

In 1925, Rake found degenerative changes of Auerbach's plexus at the lower end of the esophagus resulting in more or less complete disappearance of

the ganglion cells in ten specimens obtained from various sources. His results have since been confirmed by four other investigators. Therefore this apparently functional condition is in reality organic disease of Auerbach's plexus.

Achalasia of the cardia can often be cured by the use of a wide tube containing mercury. If the dilatation is so great that the mercury bougie coils up in the esophagus, the sphincter may be stretched from below by fingers introduced through the stomach, as was first done by Mikulicz in 1882.

Chronic peptic ulcer of the esophagus gives rise to a syndrome characterized by discomfort or pain or burning under the xiphoid while solid food is being eaten and less frequently half an hour or more after meals. The pain often radiates to the back. Early, it is relieved by alkalies, but later it is prolonged and followed by regurgitation so that the patient is often afraid to eat. Hematemesis may be severe and fatal. The usual cause of death is perforation. A fibrous structure may develop and lead to more or less complete obstruction.

An esophageal ulcer has all the anatomical characteristics of a chronic peptic ulcer. Acidotropic gastric mucosa which probably secretes acid gastric juice has been found in the esophagus. The ulcer is always situated above the cardiac sphincter. The condition is rare.

The treatment of choice is a temporary gastrostomy. In early cases, rest, alkalies, a milk diet, and atropine may cure the condition. Cecatricial stenosis may be treated by gradual dilatation before the stomach closes.

The recurrent hiatus hernia syndrome of von Bergmann is characterized by pain and a sensation of pressure in the upper abdomen associated with slight dysphagia or anginal symptoms occurring chiefly or only at night when the intra-abdominal pressure is increased by forward bending or in the prone position. Acid regurgitation is common. In some cases vomiting is the only symptom. The hernial sac may become inflamed or ulcerated, with the production of hematemesis or the passage of occult blood in the stools.

The attacks cease when the patient drinks aerated water causing rapid distention of the stomach or when he assumes an erect position.

Intermittent hiatus hernia are never recognized in roentgen examinations if the opaque meal is taken in the erect position, but are often accidentally discovered when the opaque meal is taken in the prone position. The hernia, which is never larger than a walnut, disappears when the patient stands.

In contrast to the familiar type of non traumatic diaphragmatic hernia which is due to congenital shortness of the esophagus, the hiatus hernia is associated with an esophagus of normal length. This condition is seen most frequently in elderly persons whose tissues are abnormally lax.

The diurnal attacks can be prevented by the avoidance of bending and of constriction of the abdomen by clothing. Carbohydrate intestinal d. e.

pepsia should be prevented. Postprandial attacks of pain can be prevented by the drinking of effervescent beverages with the meals to increase the intragastric pressure. Nocturnal attacks can be prevented by raising the head of the bed so that the patient is in a semi-sitting position. An ulcer diet should be given if the hernial sac is inflamed.

J. EDWIN KIRKPATRICK, M.D.

Bonsner, G. M.: The Epithelial Nature of the Oat-Cell Tumor of the Mediastinum. *J. Path. & Bacteriol.* 1934 LVIII 209.

An analysis of 125 intrathoracic tumors studied at Leeds yielded additional evidence indicating that the oat-cell tumor is of an epithelial nature. Fifty-nine of the tumors were of the oat-cell type. The ratio of males to females with these tumors was 4.4:1. The average age of the patients was forty-six years, but in 8 cases the tumor occurred before the age of thirty.

The oat-cell tumors and other carcinomata disseminate with the same relative frequency and in very much the same manner. The other lung including the hilar glands is practically never invaded by the oat-cell tumor. Peet cites this fact as evidence against a lymphatic origin. The suprarenal gland is more often invaded by carcinoma and the pancreas by the oat-cell tumor. Three of the tumors reviewed were of the small oat-cell type and would have been classified previously as sarcomata.

The author reports 2 cases in which the tumor was unsuspected during life and arose from the wall of a medium sized bronchus in the substance of the lung. He believes that these 2 tumors were derived from the epithelial lining of the bronchus.

GEORGE A. COLLETT, M.D.

MISCELLANEOUS

Trémolières, F., Tardieu, A. and Caquot, G.: The Diagnosis of Diaphragmatic Hernia of the Stomach (Le diagnostic de la hernie diaphragmatique de l'estomac). *Presse Méd.* Par 1934, XLII, 392.

None of the gastric, cardiac, or pleuropulmonary signs of diaphragmatic hernia of the stomach is pathognomonic, but certain combinations of them are very suggestive. Early gastric pain relieved by lying down and associated with paradoxical dysphagia, i.e., greater ease in the swallowing of large morsels than in the swallowing of food chewed fine and a cardiopulmonary syndrome caused by a full stomach and relieved by the frequent and copious vomiting of mucus accompanied by a rhythmical gurgling which is synchronous with respiratory or cardiac movements are signs indicating roentgen examination the only means by which a definite diagnosis can be made.

Roentgen examination may show the bilobulated hour glass image of acquired hernia by rotation. As a rule the cardiac pocket which fills first is subdiaphragmatic. In the constricted part which follows

it the opaque bolus moves upward, fills the thoracic pocket and then moves down and fills the duodenopyloric part. This is the picture when the gastrophrenic ligament is intact. In other cases the stomach has an hour-glass shape but the cardiac part is supradiaphragmatic while the prepyloric part, the pylorus and the bulb of the duodenum, remain in the abdomen, maintaining their normal relations with the lower surface of the liver. At a more advanced stage of acquired hernia and in congenital hernia the whole stomach may be in the thoracic cavity. It takes on the most unexpected forms from folding or rolling on itself. It may be divided into three or even four pockets. Certain paraesophageal stomach herniae called for brevity congenital hernia of the oesophagus, present a picture similar to that of hernia of the hiatus. The stomach is pear shaped and not bilobulated.

The roentgenogram of diaphragmatic hernia of the stomach is not always so easy to interpret. The relationship between the hernia and the diaphragm is sometimes difficult to make out. The small hernia of the hiatus generally escapes detection on examination in the ventral direction. The fornix becomes insinuated into the hiatus which is insufficient. It fills best with the patient in dorsal, ventral, or lateral decubitus or the Trendelenburg position. When the clinical signs suggest the probability of diaphragmatic hernia a roentgen examination should be made with the patient standing and lying down. When the patient is standing the fornix is no longer beneath the left arch of the diaphragm but is found beneath the central tendon, a region which moves only slightly on respiration. Therefore the gastric shadow moves very little on respiration. Displacement of the fornix beneath the central tendon and relative immobility of the stomach during inspiration are probable signs of occult hernia. The size of the hernia varies on compression of the abdomen.

The differential diagnosis of diaphragmatic hernia from other conditions with which it may be confused is discussed. The latter include epiphrenic diverticulum of the oesophagus, dilatation of the cardiac antrum, paracardiac gastric diverticulum, eventration of the diaphragm and inhibition of phrenic innervation of the diaphragm.

AUDREY GOME MORGAN, M.D.

Morrison, L. B., Morrison, S. L. and Delaney, J. H.: Herniation of the Fundus of the Stomach through the Oesophageal Hiatus; with Special Reference to Its Roentgenological Diagnosis. *New England J. Med.* 1934 CCX 624.

The authors consider only hernia of the oesophageal orifice. They discuss particularly their roentgenological study. They define hernia of the oesophageal orifice as a protrusion of a portion of the fundus of the stomach into the thorax through the oesophageal hiatus of the diaphragm. This condition has been found to be more common than was formerly thought. Diaphragmatic hernia were first described by Paré and Petit.

The greater frequency of roentgen examination of the gastro-intestinal tract has resulted in the more frequent diagnosis of hernia of the oesophageal orifice. It is believed that hiatal herniae constitute approximately two-thirds of non-traumatic and one-third of all diaphragmatic herniae.

The authors divide hiatal herniae anatomically into the following three groups:

1. Short oesophageal herniae: These are the most uncommon.

2. Para-oesophageal herniae.

3. Hernia in which the oesophagus is not shortened, but the distal end is included in the hernial sac. This is the most common type.

The short oesophageal hernia may be due to an abnormally far anterior position of the anlage of the stomach in the digestive tract or to idiopathic delay in the elongation of the oesophagus. The other types may be congenital or acquired. Congenital herniae result from delay in the closure of the ommental bursa. Acquired forms result from indirect trauma causing increased intra-abdominal pressure. Diaphragmatic herniae have no characteristic syndrome; their symp-

ptoms vary. The most common complaint is vague pain or distress under the ensiform accompanied by regurgitation in the recumbent position.

Roentgen study is essential for a final diagnosis. A fluoroscopic examination should be made with the patient in the prone, supine, and oblique positions. Menger's position (the patient lying face down with the right arm extended alongside the body, the left arm on a pillow and the knee drawn up so that the body rotates somewhat obliquely to the left, giving a view of the mediastinal space) is the most satisfactory position. Roentgen differentiation of the three types of hiatal hernia is possible in typical cases.

The treatment includes preventive measures, regulation of the diet, and measures for the relief of symptoms. For the relief of severe symptoms not alleviated by non-surgical measures, surgical repair is necessary. Reduction of short oesophageal hernia is usually unsuccessful. Phrenotomy may be performed in cases of hiatal hernia in which radical operation is contra-indicated and as a pre-operative measure for reduction. Recurrence of hiatal hernia is frequent.

LEON OCHSOWITZ, M.D.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Chernier M: Indirect Inguinal Hernia in the Light of the Newer Interpretation of Anatomy *Ann Surg.*, 1934, xcix, 577

Chernier is of the opinion that the so-called openings or structures forming the openings through which the viscus appears in indirect inguinal hernia are the primary causes of the hernia and to be considered, not as defects or faults in the body but as definite well planned exits of structures which through evolutionary changes, have been found to be maintained most advantageously outside the abdominal cavity.

The primary factors in the development of the average anatomical pattern of the lower ventral abdominal wall are (1) the development of an undifferentiated abdominal wall plate, and (2) the development of the gubernacular cord within this abdominal wall plate.

The author's theories regarding the formation of indirect inguinal hernia may be summarized as follows:

1. The universal valve pattern and variations of that pattern are a cause of hernia (evolving process) and govern their size, shape, and tension.
2. The external oblique muscle plays only a passive rôle in the resistance to intra-abdominal pressure.
3. The external ring has no influence in the prevention of viscus exit and therefore should not be given the position of primary importance it now occupies in the examination of employees.
4. The internal arch formation of the transversalis and internal oblique muscles should be the primary consideration in all examinations since it is the active preventive of viscus exit.
5. Attention should be focused on the variational rather than the average anatomy as a basis for technique.
6. The surgeon should devise a technique to remedy the structural failure in the individual case rather than adhere to a surgical routine.

ALTON OCHSNER, M D

Menegaux, G: So-Called Transmesocolic Hernias (Les hernies dites transmesocoliques) *J de chir.*, 1934, xliii, 321

Hernia through the transverse mesocolon are very rare. The author was able to collect only fifty nine cases from the literature. To these he adds a case of his own. He divides such hernia into two groups: those without a sac and those with a sac made up of a thinned-out portion of one or both leaves of the mesocolon. The former are always large because there is nothing to prevent free ingress of the small intestine into the lesser peritoneal sac. The fact

that the defects in the mesocolon are unusually large explains the infrequency of strangulation. Intestine passing through the orifice may remain in the lesser peritoneal cavity escape through the foramen of Winslow or perforate the gastocolic ligament or the lesser omentum. In a few cases the viscus is the stomach instead of the small bowel.

The pathogenesis of mesocolic hernia is still disputed. In over half of the cases there is an associated gastric or duodenal ulcer.

The clinical picture is very variable. In some of the cases reviewed the symptoms of hernia were completely overshadowed by those of an associated peptic ulcer. Some of the patients presented the signs of acute obstruction, and others those of sub-acute or chronic intestinal occlusion. In a few cases the condition was entirely latent or produced only vague digestive disturbances. The X ray may be of great aid in the diagnosis.

The treatment is surgical. It consists in reduction of the herniated bowel and closure of the aperture. Reduction is usually not difficult as adhesions are uncommon. Closure of the aperture may present a problem if the defect is very large.

LEO M. ZIMMERMAN, M D

Billi, A., and Greco, T: A Contribution to the Experimental Study of So-Called Biliary Peritonitis and the Effect upon It of Vagotomy (Contributo allo studio sperimentale delle cosiddette peritoniti biliari e all'influenza su di esse della vagotomia) *Chir chir* 1934, x, 43

The authors review the literature and report experiments they carried out to determine the effect of the nervous system on the form of choleperitonitis which is commonly called biliary peritonitis. As the results of section of the vagus reported in the literature have often been contradictory and as the lesions were often produced by a technique markedly at variance with the processes occurring in clinical cases the authors thought it advisable to repeat some of the experimental work.

In a group of eight rabbits laparotomy was performed and bile aspirated from the gall bladder with a needle was cultured. In every instance the bile was sterile. Before the abdomen was closed, incisions were made in various portions of the gall bladder and left open. Six of the eight animals died in from fourteen to forty hours.

In a group of twelve rabbits similar operations were done and vagotomy was performed in addition. All of the animals died in from fourteen to thirty six hours. At necropsy the bile was found to be sterile and the most common findings were hemorrhage at various points in the peritoneal cavity and staining of the organs with bile.

These findings indicate that bile in the peritoneal cavity exerts a chemical action and does not produce a true peritonitis.

The authors conclude that the course of choleperitonitis is not favorably influenced by subdiaphragmatic section of the vagi, and that the slight difference in the survival of the two groups of rabbits may have been due simply to a difference in the rate of absorption of toxic products from the bile.

EDWARD T. LEWIS, M.D.

GASTRO-INTESTINAL TRACT

Clorf, L. H.: Foreign Bodies in the Gastro-Intestinal Tract. *Surg. Clin. York Aw* 1934, v. 77.

The author states that while there is unanimity of opinion regarding the diagnosis and treatment of foreign bodies in the esophagus, there is considerable disagreement regarding the proper treatment of such bodies in the stomach and intestines. As the esophagus is part of the alimentary canal, it should always be included in the examination for a suspected foreign body in the digestive tract. The most common and often the only symptom produced by a foreign body in the alimentary canal is dysphagia. A foreign body in the esophagus may cause no demonstrable obstruction if only liquid food is given. The diagnosis can be established positively only by roentgen examination. When the foreign body is translucent, a radiopaque substance such as barium and bismuth, either in solution or in capsule form, must be used. The treatment is removal with the esophagoscope. This is 100 per cent efficient.

Foreign bodies that enter the stomach and intestines commonly pass through the pylorus and intestinal canal. Notable exceptions are long foreign bodies such as straw pins, needles, hair pins, nails, and safety pins. These are especially prone to lodge at the duodenojejunal junction. The aid of a competent roentgenologist should be obtained to determine the size and location of the object and whether it will be able to continue its passage through the intestinal tract without interruption. If the foreign body remains in the stomach, gastroscopic removal aided by the fluoroscope is the method of choice. For cases in which foreign body has reached the intestinal tract when it is first observed the following procedures are recommended:

1. Frequent fluoroscopic examination.
2. Continuation of the patient's usual diet.
3. The avoidance of all forms of medication that will stimulate intestinal activity.

If acute abdominal symptoms suggesting peritoneal irritation develop surgical removal may be necessary.

ANNETTE L. SANDERSON, M.D.

Shallow, T. A.: The Treatment of Foreign Bodies in the Gastro-Intestinal Tract from the Surgeon's Viewpoint. *Surg. Clin. York Aw* 1934, xiv 57.

Teamwork is necessary for success in the management of foreign bodies in the gastro-intestinal tract.

No definite rules can be laid down for all cases. Each case must be treated according to its individual requirements. For the successful removal of a foreign body which has passed the esophagus the aid of the roentgenologist is always necessary. The esophagoscopist's part is played when the foreign body is lodged in the esophagus or is retained in the stomach. If the patient is seen before the foreign body has passed the pylorus, there will be no need for a surgeon. The endoscopic procedure has no mortality. Surgical removal is indicated in cases of persistently lodged foreign body. It is difficult for a foreign body to pass through the duodenum but when it does so it will usually pass entirely through the gastro-intestinal tract.

The indications for open surgical intervention are:

1. A persistently lodged foreign body which is shown to be in the same position on repeated X-ray examinations.

2. A foreign body which causes persistent abdominal pain.

3. A foreign body lodged at any point in the intestinal tract which causes pain, tenderness, and rigidity—indicating that it has penetrated the intestinal wall and is producing a local peritonitis.

Immediately before the patient is placed on the operating table, a roentgenogram should be made to determine the location of the foreign body and to compare its location then with its location as shown by the previous X-ray examination.

If the foreign body has moved and there are no indications of peritonitis, operation should not be undertaken and the patient should be returned to bed.

When the foreign body is found in the first or second portion of the duodenum, it can readily be returned by manipulation into the stomach where its removal may be accomplished without difficulty and without the risk of producing a narrowing of the duodenum. When the foreign body is in the third portion of the duodenum, this procedure should be attempted but is not accomplished so easily.

The removal of foreign bodies from the intestinal tract below the duodenum is not difficult, but the author questions whether it is necessary unless there is evidence of perforation indicated by peritonitis.

Surgical intervention should not be recommended unless repeated X-ray examination or evidence of perforation shows that the foreign body will not pass.

Having traversed the duodenojejunal junction the foreign body will usually pass out of the body without interference.

In cases of persistently lodged foreign bodies and those with evidence of peritonitis or constant pain surgical intervention is necessary.

CHARLES F. DU BOIS, M.D.

Altman, R. S.: The Treatment of Profuse Bleeding from the Stomach and Duodenum. *Lancet*, 1934, ccxcv, 839.

Altman reports a study of the records of 63 cases of profuse bleeding from the stomach and duodenum.

which were treated at the London Hospital in the period from 1929 to 1933. In thirty-one, strictly medical treatment was given in eleven medical treatment with the addition of blood transfusion and in twenty-one, surgical treatment.

Of the thirty-one patients given strictly medical treatment seventeen with an average age of fifty-one years, died and fourteen, with an average age of forty-one years recovered. When one patient seventy-four years old, three patients with malignancy and an infant two days old are excluded there remain twenty-six patients given medical treatment alone, twelve of whom died of gastric or duodenal hemorrhage while under the treatment.

In the eleven cases treated medically with the addition of blood transfusion there were three deaths. The average age was forty-one years.

In the cases treated surgically there were seven deaths and the average age was forty-five years. In all of the cases in this group the operation was performed to obtain hemostasis.

From this study the author draws the following conclusions:

1. A distinction should be made clinically between grave cases and less severe cases. Recurrent bleeding is often but not always grave. Cases in which the red cell count falls below 2,000,000 or the hemoglobin decreases below 40 per cent (on a scale on which the normal is 100) will usually be grave. However the distinction should be based on consideration of the clinical picture as a whole.

2. The less severe cases should be treated according to accepted medical principles.

3. The grave cases should be treated medically, with the patient in bed. Sufficient morphine should be administered to insure complete rest, and a transfusion of about 500 c. cm. of blood should be given, without moving the patient from his bed after careful cross-grouping.

4. If further bleeding is indicated by subsequent hematemesis or a rising pulse rate the transfusion should be repeated once or twice within from twenty-four to forty-eight hours or when necessary.

5. If bleeding still continues and the patient's condition deteriorates operation should be undertaken promptly and another transfusion given. The operation should probably be restricted to the minimal procedure necessary to find and secure the bleeding point.

SAMUEL J. FOOLSON M.D.

Mueller H.: Geographic Distribution of Peptic Ulcer. *Am. J. Surg.* 1934 XLIII 497

A study of the mortality statistics of the United States, Mexico, Argentina, the West Indies, Panama, Africa, Syria, India, China, the Dutch East Indies, Australia, England, France, Germany, Russia, Italy and Denmark showed that the incidence of peptic ulcer varies not only from country to country but also within each country. Latitude has apparently no effect upon it as in Denmark which is in the same latitude as Leningrad, Russia, the incidence of peptic ulcer is 16.7 per cent, whereas in

Russia it is only 0.8 per cent. The high incidence in Denmark may be explained by the fact that the Danes often eat six meals a day.

Peptic ulcer was found as a general rule to be more frequent in the white race than in the colored race and much more frequent in males of both races than in females. In the United States it is relatively rare in colored females.

A curious phenomenon noted was a decrease in the occurrence of ulcer in Caucasians living in the tropics. However these Caucasians exhibited no racial immunity such as that shown by the negro in the West Indies. In the West Indies negroes are not subject to ulcer whereas in Panama during the construction of the Panama Canal, they showed the highest incidence of ulcer as determined by autopsy. In Abyssinia, peptic ulcer is found far more frequently in colored than in white persons. That malnutrition may be an important factor in its development was demonstrated by the increase in the incidence of ulcer which occurred during the War in Germany and by the constantly high incidence of the lesion in Abyssinia and India.

SAMUEL J. FOOLSON M.D.

Hinton, J. W.: Chronic Pancreatitis Associated with Peptic Ulcer. *Arch. Surg.* 1934 XLVII 580

In the Fourth Medical and Surgical Divisions of the Bellevue Hospital, New York, 583 patients with peptic ulcer have been studied during the last five years. One hundred and forty-three had been operated upon before they entered the clinic. Of these 71 were operated upon for chronic ulcer and 73 for acute perforated ulcer.

The purpose of the clinic is to determine the best method or combination of methods to be used in treating such patients conservatively. Operation is performed only as a last resort. Among the recognized indications for operation is pain which has resisted all methods of medical treatment. Pain of this type occurred in 33 of the cases reviewed. In some of these cases the associated pancreatitis was marked. Thirteen such cases are reviewed briefly. The most important aid to the diagnosis of chronic pancreatitis in the advanced stages is the history. The patient usually complains of pain more severe than that previously experienced. The dull discomfort when the ulcer was first diagnosed has ceased. Food affords little relief. Night pain is often severe enough to necessitate the use of a sedative. The pain radiates directly to the lumbar region and is usually felt on both the right and the left side of the spine. The results of physical examination are otherwise negative. Routine laboratory work has afforded little help in determining the course of these lesions. When the diagnosis of associated pancreatitis is made operation should be performed immediately as delay renders the prognosis less favorable. The author calls attention to the fact that in 141 of the cases reviewed laboratory work was of no aid in determining the course of either a gastric or a duodenal ulcer.

SAMUEL J. FOOLSON M.D.

Jaki, G.: Intestinal Occlusion from Strangulation (Darmverschluss durch Abknüpfung). *Osterr. Wochschr.* 1933, pp. 1016-1040.

During the past ten years in the Huetli Clinic (Debrecen, Hungary) 70 operations were performed on 67 patients for intestinal occlusion due to strangulation of the intestine. These cases were found among 993 cases of intestinal occlusion due to various causes. Twenty-eight of the 67 patients died. No classification of the cases on the basis of age or sex was possible. Most of the patients were between the ages of fifteen and fifty years. Fifty-six of the strangulations were caused by a cord-like strand of tissue of inflammatory origin, 10, by a Meckel diverticulum and 2 by a developmental anomaly. In 2 cases the constricting band was the small intestine itself. In 3 cases, strangulation occurred twice. Of 55 patients, 20 had had a previous abdominal operation. The most common previous operations were appendectomy and gynecological interventions in the small pelvis.

In the formation of the strangulating bands the chief rôle was played by abdominal inflammatory processes resulting in peritonitis. Gastro-intestinal perforations were not among the etiological processes. Tuberculous peritonitis causes strangulation only very rarely. In 5 of the cases reviewed the strangulation occurred during pregnancy or the puerperium. In these cases it was produced by the gravid uterus itself or by adhesions between the uterus and neighboring structures. In intestinal strangulation occurring in pregnancy or the puerperium the prognosis is extremely unfavorable and the diagnosis very difficult. In 8 of the cases reviewed the cause of the strangulating bands could not be determined.

To prevent the formation of adhesions after operation the operative procedure must be carried out as gently as possible. Attempts to prevent adhesions by the use of chemical solutions have been unsuccessful. The avoidance of drainage and tamponade is recommended. However, the danger lies, not in the drain or tampon itself, but in the inflammatory process which they combat and the constitutional characteristics of the patient. Careful covering of injured peritoneal surfaces (burial of the appendix stump) is important. Bands of tissue are often present for years without causing symptoms. As a rule the band is formed from the omentum. The characteristic omental tissue is slowly changed into a firm, fibrous, rounded cord. In some cases the strand originates from the peritoneum. The constriction shuts off either the venous circulation alone or both the venous and the arterial circulation. The outcome depends on whether a short or a long loop of intestine is strangulated. When the loop is short, toxemia develops slowly whereas when it is long, death results relatively rapidly from shock.

The interval of time between the abdominal operation and the occurrence of the strangulation in the cases reviewed was less than six months in 50 per cent, less than a year in 70 per cent, and more than

a year in 30 per cent. In 5 cases the strangulation occurred before the operative wound healed.

Of 70 cases exclusive of those in which the strangulation was due to Meckel's diverticulum, the strangulation occurred in the lower ileum in 48 (80 per cent), the upper ileum in 5 (5 per cent) and at the ileocecal junction in 5 (8.33 per cent). In 5 cases it involved the large intestine. In 2 cases it involved the cecum and in 1 case each the transverse colon and the sigmoid. Strangulation due to Meckel's diverticulum involved the lower ileum in 6 cases and the ascending colon in 1 case. The most common site of strangulation is the lower portion of the ileum. This part of the intestine is involved in 90 per cent of cases. The frequency of its involvement is due to topographical and anatomical factors.

The mortality was 60 per cent in the reviewed cases of strangulation due to Meckel's diverticulum, 37 per cent in those in which it was due to an inflammatory band, and 50 per cent in those in which it was due to the small intestine itself. In 23 of 25 fatal cases the cause of death was peritonitis, in 1 case, myocardial degeneration and in 2 cases, generalized tuberculosis.

All of the 3 patients who were operated upon on the first day recovered. Of these 1 was operated on within six hours and two were operated upon at the end of twenty-one hours. In the cases in which operation was not done until the second day the mortality was 30 per cent. Thereafter the mortality curve rose sharply ultimately reaching 100 per cent.

In 44 cases in which the constricting band was merely cut and the stump burned the mortality was 18.10 per cent whereas in 19 cases in which intestinal resection was done the mortality was 73.68 per cent. Of the cases coming for operation on the second day intestinal resection was necessary in 50 per cent. Lowering of the mortality can be attained only by early diagnosis.

After the development of the characteristic symptoms of intestinal strangulation, surgery is the only possibility. To determine the site of the strangulation, simple abdominal roentgenoscopy is of great importance. The operative procedure should be as conservative as possible. General anesthesia is preferable to local anesthesia. High spinal anesthesia is best. Enteropuncture or enterotomy does not appear to be of much value and should be avoided, especially when intestinal resection is not to be done.

In the after treatment, restoration of intestinal motility is of chief importance. E. ISLITS (2)

Holt, R. L.: The Pathology of Acute Strangulation of the Intestine. *Brit. J. Surg.* 1934, xii, 383.

The author divides acute intestinal strangulations into those in which the venous circulation alone is obstructed and those in which both the arterial circulation and the venous circulation are blocked. A further subdivision into long-loop intermediate, and short-loop strangulation is necessary as Foster and Hauser have demonstrated the great dissimilarity in the resulting phenomena.

In the investigations reported it was found that in strangulation of a long loop (over 40 cm. in the dog), the loop becomes engorged with blood plasma and cells. As much as 50 per cent of the circulating blood may be withdrawn into the area, which is incompatible with life. This bears out Blalock's work on experimental shock.

In strangulation of loops of shorter length the loss of blood was insufficient to cause death. Bacteria soon invaded the strangulated loop and a large amount of exudate was poured from the segment. At first, the exudate was very similar to blood plasma and non-toxic, but after about twenty hours it became dark and fetid, and on intraperitoneal injection into an animal caused death. By replacing the loop contents with water and air the author demonstrated that the origin of the toxic substance was the wall of the gut rather than the intestinal contents. He found that the toxin is heat stable and that its virulence is not increased by boiling, also that it does not pass through a Berkefeld filter. It appears to be a protease, not an exotoxin.

Pressure within the strangulated loop is at first maintained by tonic contractions of the intestinal musculature. After the musculature has lost its tone, it is maintained by the formation of gas. This pressure probably prolongs the period of exudation long after thrombosis of the vessels has occurred. In very short loops the amount of toxin escaping is not sufficient to cause death. The disintegration of the intestinal wall continues until perforation occurs. Death then results from either the obstruction or general peritonitis. In very small strangulations, such as those seen clinically in a Richter hernia, death is probably caused by the dehydration and alkalosis accompanying the obstruction.

WILLIAM C. BECK, M.D.

Bartlett, W. Jr.: Pyloric Balance in Ileus Treated by Continuous Suction from the Stomach. *Am. J. Surg.* 1934, vol. 48.

The author urges continuous positive suction of the stomach as a curative measure and as an aid to the understanding of the deranged physiology of ileus and the course of recovery from the condition.

To obtain such suction he uses an enema can suspended from a standard. A suction chamber is made by fitting a two-hole rubber stopper tightly into the barrel of a 20-cm. piston syringe. Through the holes in the rubber cork pass a straight and a curved glass connecting tube. The straight tube connects the suction chamber to the can and the curved tube leads to the nasal catheter. The suction chamber empties into a basin through a narrow glass tube connected with the tip of the syringe by a piece of rubber tubing. A screw clamp is adjusted on the rubber connection between the can and the straight glass connecting rod in such a manner that it permits the water to drip from the can at the rate of from 60 to 80 drops per minute.

With this apparatus the gastro-intestinal status can be ascertained with mathematical accuracy. It

is possible to measure in cubic centimeters the fluid passing over the pylorus per unit of time and to ascertain its direction under the influence of the tone of the stomach and intestines and of peristalsis or reverse peristalsis. If the patient is not permitted to have fluids by mouth there are only two factors to be considered: how much fluid has run out of the can and how much fluid is in the basin. By subtracting the former from the latter the amount of fluid withdrawn from the stomach and duodenum is determined.

However the author prefers to give fluid by mouth and this adds a third factor. To determine the amount of fluid withdrawn in excess of the amount of fluid drunk, or the amount of fluid retained by the patient, the fluid drunk is subtracted from the result obtained by the calculations described in the preceding paragraph.

If the result of the last subtraction is a positive number if the contents of the basin are greater than the amount flowing from can and the amount drunk by the patient the remainder has been recovered from the stomach and there is a negative pyloric balance. If on the other hand, the amount of fluid in the basin is less than the sum of the fluid drained from the can and drunk, there is a positive pyloric balance as this indicates resumption of movement of fluid in the normal direction and progressive improvement.

The author has yet to see any harmful result from leaving a nasal catheter in position. The longest period over which he has used one continuously was nine days. The catheter is lubricated with white, sterile vaseline before its passage, and oil of rose with a 0.5 per cent content of phenol is dropped into both nares every six hours. As a rule the catheter is withdrawn, cleaned, sterilized, and inserted through the opposite nares every twenty-four hours.

In analyzing the charts, the negative or positive pyloric balance per hour is determined. This is done by dividing the pyloric balance by the number of hours over which the calculations were made. When a positive pyloric balance of from 90 to 100 c.c.m. per hour on continuous suction is attained and represents well over 50 per cent of the total intake by mouth per hour, the nasal catheter is clamped off to interrupt the siphonage as well as the positive suction. The patient is then given from 180 to 200 c.c.m. of fluid to drink within a half hour. Two hours later the stomach is emptied by suction with a syringe. This procedure is repeated over a period of from eight to ten hours, and if not more than about 30 c.c.m. is recovered each time, the nasal catheter is removed and not more than 90 c.c.m. of water per hour is given by mouth for the next twenty-four hours. Gradually the fluid intake is increased.

Increasing experience with this type of treatment indicates that there is a large group of cases of intestinal obstruction in which the danger of death is less if decompression of the bowel is brought about by continuous suction of the stomach than if operation is performed more than a very few hours after the

onact Cases of strangulated obstruction are obviously not included in this group.

EARL O. LATIMER, M.D.

Sjöström, P. M.: *Diagnosis and Disinvasion with the Aid of the Fluoroscope in Cases of Intussusception (Ueber Diagnostik und Disinvasion von Darmintussusceptionen mit Hilfe von Röntgendurchleuchtung)*. *Acta Chir. Scand.* 1934 LVII 135

Since 1927 the Surgical Clinic and the Roentgen Department of the Land Hospital have been using the roentgen rays not only for the diagnosis of intussusception in children but also for disinvasion under visual control with the aid of a barium enema under pressure, massage, and taxis. During the last three years all cases of intussusception have been referred to the Roentgen Department. When disinvasion is successful, the patient is kept under clinical observation and control. When the attempt fails, immediate laparotomy is carried out.

Thirty-eight cases of intussusception have been examined with the roentgen rays. Disinvasion under the fluoroscope was tried in nearly all. In twenty-two cases it was successful and the child was discharged as recovered without operation. In the sixteen cases in which it failed, reduction was accomplished at operation. In the cases of reduction under fluoroscopic control there were no deaths, whereas in those in which operation was done there were six deaths.

It is the ileocolic intussusception that can be reduced under roentgen control. Of nineteen cases of this type which have been treated since 1931 reduction under the fluoroscope failed in only one.

Intussusception not occurring in the ileocolic region can frequently be diagnosed roentgenologically and should be operated upon as soon as the diagnosis is made.

Cases with a history shorter than twenty-four hours are the most favorable. In those with a history longer than two days great care is necessary and taxis should not be attempted.

As it cannot always be ascertained roentgenologically whether reduction has been entirely successful or not, a period of clinical observation following the attempt at reduction is an important part of the procedure. Roentgen disinvasion cannot be used as an independent method of treatment. However, the author recommends it as a pre-operative method, as about two-thirds of all cases of intussusception can be cured by conservative methods and these do not increase the difficulties or mortality in the remaining third in which surgery will be found necessary. There is reason to believe that non-operative reduction will have a lower mortality than operative reduction.

WYLLIE, D. P. D.: *Jejunal Ulcer*. *Ann. Surg.* 1934, LVII, 401

Postoperative jejunal ulcer occurs much more frequently in patients who, before operation, have

a high gastric acidity and little gastric retention. It occurs but rarely in patients with pyloric or duodenal stenosis of long duration and low gastric acidity. It was in the treatment of the latter type of case that the reputation of the operation of gastrojejunostomy was founded, and if the operation had been restricted to that type jejunal ulcer would not be the problem it is to-day.

Cases of duodenal ulcer with high acidity and little or no stenosis should be treated by gastroduodenostomy or some other form of plastic operation at the pylorus. Injudicious or heavy handling of tissues and the use of clamps at operation may lower the tissue vitality and thereby lead to the formation of a stomal ulcer in the early post-operative period. The operation should be regarded, not as a cure, but rather as an incident in the treatment of peptic ulcer. Regulation of the diet and the use of alkalies during the early months of convalescence are imperative. The sensitive duodenum should be protected from hyperacid gastric juice until it has acquired immunity. Neglect of these reasonable precautions must inevitably lead to a high incidence of jejunal ulcer.

The most common complications of jejunal ulcer are:

1. Recurrent hemorrhage. This is very frequent and most difficult to treat. It requires surgical intervention preceded by blood transfusion.

2. Perforation into the free peritoneal cavity. While uncommon, this requires closure without compromising the gastrojejunal outlet. If the patient survives this intervention a second operation directed at the ulcer and preventing a formidable technical problem is necessary.

3. Subacute perforation with the formation of an inflammatory mass. This calls for conservative treatment until the inflammatory reaction has subsided. Later a partial gastroduodenostomy should be performed. When the general condition is poor and the inflammatory infiltration of the mesocolon and the root of the mesentery is such as to make a resection formidable, reasonably good results are obtained by a double short-circuiting operation, i.e., gastroduodenostomy to exclude the old ulcer and duodenojejunostomy to exclude the region of the jejunal ulcer. In cases of jejunal ulcer penetrating into the mesocolon and posterior abdominal wall, excision of the ulcer should not be attempted as it may damage the superior mesenteric vein. In such a case in which the ulcer was in the proximal loop satisfactory results were obtained by removing the gastro-enterostomy stoma, closing the stomach and jejunum, establishing a gastroduodenostomy opening to exclude a stenosing duodenal ulcer and performing a duodenojejunostomy to short-circuit the jejunal ulcer. Many of these jejunal ulcers are complicated by duodenal stasis secondary to thickening and fibrosis in the region of the stoma which leads to gradual narrowing and in some cases potential if not actual occlusion of the gastro-enterostomy opening. Cases with such lesions must be treated by

drainage of the partially obstructed duodenum before complete relief can be afforded. In some cases drainage of the duodenum by the establishment of a duodenostomy may be sufficient. In others, this operation must be associated with a direct attack on the jejunal ulcer and the original stoma. The author reports two illustrative cases.

Jejunocolic or gastrojejunocolic fistula is always serious. The mortality of a one stage radical operation is very high almost 40 per cent. As the patients are usually in poor condition a two-stage operation is advisable. The author reports a case in detail. The patient had a fistula between the posterior wall of the stomach and the splenic flexure of the colon. As it was deemed inadvisable to detach the colon from the stomach where both were fixed, infected, and edematous, the portion of the colon involved in the fistula was excluded by isolating the loop of colon attached to the stomach and the continuity of the colon was restored by an end-to-end anastomosis. Later, when the patient was in better condition the isolated colon loop was excised with the gastric ulcer and a part of the gastric wall around it. The patient made a rapid recovery and remained in good health. SAMUEL J. FOEHLSON M.D.

Brea, M. M. Ileocecal Tuberculosis; Certain Clinical Types and Their Treatment (Tuberculosis Ileocecal. A propósito de algunas modalidades y su tratamiento). *Semana Méd.*, 1934, xli, 553

Brea reports eight cases of ileocecal tuberculosis from the clinic of Arce. While they were of different pathological types they may be divided into two groups according to the first complaints. In the first group were four cases in which pulmonary lesions were present, but because of the occurrence of acute pain in the right lower quadrant of the abdomen without a previous history of gastrointestinal trouble operation was performed for appendicitis. In two of them there was a persistent draining sinus which required further surgery and a fecal fistula developed. In the two others a fistula appeared immediately after the appendectomy.

The second group included the cases of four patients with no clinical evidence of pulmonary tuberculosis who had complained for years of gastric disturbances which had been attributed to peptic ulcer gastritis or partial intestinal obstruction. X-ray examination established the diagnosis and revealed latent fibrous lesions of tuberculosis in the lungs.

All fistulae following appendectomy which are not due to a foreign body and especially fecal fistulae, in persons with a history or roentgen evidence of tuberculosis should suggest the possibility of ileocecal tuberculosis.

The patient with chronic dyspepsia without a demonstrable peptic ulcer but with roentgenologically demonstrable pulmonary lesions should be subjected to a complete X-ray study of the colon, especially the ileocecal region.

Surgical tuberculous lesions of the ileocecal coll are well localized at first and develop very slowly. The surgical treatment of choice for such lesions is resection but simple ileocolostomy with exclusion of the diseased segment has resulted in cure in cases in which it was thought unwise to attempt radical removal. Simple laparotomy does not aggravate the course of the disease and at times seems to bring about improvement. Therefore it should be performed as a diagnostic exploration in doubtful cases.

The anatomicopathological type of intestinal lesion coincides usually with the lesion found in the lungs. Its slow evolution is explained by its predominantly fibrous character. The condition of the lungs does not contraindicate operation. A more dependable criterion of the advisability of surgical treatment is the general condition.

WILLIAM R. MEERER M.D.

Lanos, J. Primary Epithelioma of the Ileum (Épithélioma primitif de l'iléon). *Bull. et mém. Soc. d' chirurgiens de Paris* 1934, cxvi, 124

The patient whose case is reported was a woman thirty-one years of age who had been ill for three months with supposed pyloric stenosis. She gave a history of pain, vomiting and rapid loss of weight. Ulcer management failed to relieve the symptoms and violent peristalsis continued in the umbilical region. On fluoroscopic examination the stomach was found to be small and high. There was no roentgen evidence of pyloric ulcer and there was no tenderness in the stomach. The duodenal cap was dilated and freely movable. At the beginning of the jejunal junction in the right flank there seemed to be a blockage in the small bowel with violent local peristalsis. A diagnosis of localized tuberculous peritonitis was made.

At operation, the ileum was found thick walled and dilated. At the mesenteric border there was a whitish tumor which compressed the bowel to such a degree that only a thin passage remained. Pea-sized lymph nodes were found in the mesentery. The involved portion of the bowel was excised and a circular end-to-end anastomosis was done.

The tumor which was submucosal and thick involved all of the muscle coats of the bowel wall and had invaded the mesenteric fat. It proved to be a round-celled epithelioma. The enlarged nodes were merely hyperplastic.

Postoperative recovery was uninterrupted until the eleventh day when symptoms of obstruction of the small bowel again appeared. Repeated X-ray examination then showed six different fluid levels of accumulation in the small bowel. As multiple tumor foci were believed to be present a second operation was not performed. KELLOGG SPYER M.D.

Hunt, V. C. and Bonesteel H. T. S.: Meckel's Diverticulum Containing Aberrant Pancreas. *Arch. Surg.* 1934, cxviii, 425

The condition of aberrant pancreas was first described by Klob in 1859. In 1860 Montgomery cited

a case in which a pancreatic nodule was found in the wall of the ileum. As early as 1737 Schull reported the discovery of gland substance in a diverticulum of the ileum. Aberrant or accessory pancreas is an infrequent anomaly. The authors have found 36 cases recorded in the literature since Simpson collected 150 from the literature in 1927. To these they add another. Of these 186 cases, the aberrant pancreas was found in the stomach, jejunum, or ileum in 178. In 33 cases it was in a diverticulum of the stomach, duodenum, jejunum, or ileum. In 13 of the latter the diverticulum was classed as of the Meckel type.

Many theories have been advanced to explain the causation of aberrant pancreas. Controversy has arisen also as to whether the diverticula were secondary to the pancreatic nodules or were true Meckel diverticula containing aberrant pancreas. In support of the former theory was the discovery of a pancreatic umbilical fistula, whereas against it were other findings such as the presence of 2 diverticula, one a true Meckel diverticulum and the other containing pancreas.

The authors report a case with a history of acute abdominal pain suggesting typical acute appendicitis. As the clinical examination and laboratory findings appeared to confirm this diagnosis, the abdomen was explored through a rectus incision. The appendix showed a moderate amount of inflammatory reaction which was insufficient to account for the clinical findings. Examination of the terminal ileum revealed a Meckel diverticulum 8 cm. in length situated about 90 cm. from the ileocecal valve. At the tip of the sac there was a firm, polyp-like growth covered by a granular mucous membrane. Sections of the nodule, which measured 3 by 1.5 by 1 cm. showed typical pancreatic glandular acini. From 2 to 5 islands of Langerhans were seen in each low-power field. Overlying the nodule there was hypertrophied mucous membrane which had the appearance of small intestine while over the mid-portion of the nodule there was mucous membrane which closely resembled that seen in the stomach.

In conclusion the authors briefly review the 8 recorded cases of aberrant pancreas appearing in diverticula of the terminal ileum and the 13 cases of Meckel's diverticulum containing pancreatic tissue. They call attention to the fact that although most of these diverticula were found at autopsy some of them had given rise to a surgical condition such as intussusception, mechanical ileus, umbilical fistulopyrosis and duodenal ulceration and obstruction, carcinomatous changes, fat necrosis, or intestinal diverticula.

WILLIAM C. BECK, M.D.

Cobbins, A. J.: Multiple Carcinomas of the Colon: with Four Original Cases. *Brit J Surg* 1934, xxi, 570.

Multiple primary malignant growths occur more frequently than can be explained by mere coincidence. While they may be attributed to the presence of multiple or diffuse precancerous lesions, a more probable cause is increased susceptibility to malign

nant disease. One growth does not confer immunity to the development of another.

The etiology of multiple carcinoma of the intestine is the same as that of multiple primary growths elsewhere. Multiple adenomata are definite causes of multiple cancers of the colon and rectum.

All forms of intestinal polyp are potentially malignant and should be treated as potentially malignant growths.

The possibility that more than one growth may be present or develop should be remembered in all operations for cancer of the intestine and in the prognosis of that condition. SAMUEL KAHN, M.D.

Perret, C. A.: Acute Non-Perforated Appendicitis. The Technique of Removal of the Appendix and the Prophylaxis of Postoperative Adhesions (Considérations sur les appendicites aiguës non perforées, la technique de l'ablation de l'appendice et la prophylaxie des adhérences post-opératoires). *Rev. méd. de la Suisse Rom.* 1934 p. 320.

The symptoms usually described as those of appendicitis are really those of beginning peritonitis from rupture of the appendix. The diagnosis of acute non-perforated appendicitis is by no means easy. The only constant symptom is pain and this does not always occur at McBurney's point. The appendix may be located almost anywhere in the abdominal cavity but careful palpation will reveal its site. The author gives a classification of the different localizations of the appendix. These may be intraperitoneal or extraperitoneal. The intraperitoneal localizations include the discal sac, the pelvic, the intermesenteric, and subhepatic localizations. The subhepatic localization may be retrocecal or retrocolic. Perret describes the incisions to be used for these different localizations. He states that drainage is necessary even when the appendix is apparently not perforated since there may be a microscopic perforation which may lead to secondary abscess. He describes the evisceration of an erect appendix by the see-saw method.

The prevention of postoperative adhesions is of the greatest importance as the patient often suffers more from such adhesions than he suffered from the original disease. Postoperative adhesions are generally caused by blood clots which become organized, bruising of the visceral peritoneum with forceps or dry compresses, or failure of the surgeon to peritonize vessel pedicles or to prevent drying of the serous membrane of exteriorized viscera. Generally the omentum becomes adherent to the zone where the appendix is buried. Sometimes the cecum or the last part of the ileum becomes adherent to the wall. To prevent this the author peritonizes the stump of the meso-appendix with the suture of fine silk tied to invaginate the pursestring suture with which the appendix is buried. If this method is impracticable for any reason the stump of the meso-appendix and the zone where the appendix is buried can be peritonized with the tongue of omentum resembling a cock's comb which is located at the periphery of

the last few centimeters of the ileum and in many patients is found in the lower ileocecal angle. It is a good idea at the end of the operation to pour hot physiological salt solution containing glucose into the abdominal cavity as this tends to prevent the formation of adhesions by dissolving clots, revivifying the tissue, hastening the re-establishment of peristalsis, and moistening the serous membranes.

AUDREY GOOS MORGAN M D

Jones, E. S.: Appendicostomy in Cases of Ruptured Appendix Associated with Diffuse General Peritonitis. *Ann Surg.*, 1934 **xcv**, 640

In cases treated by the methods commonly employed the mortality of acute rupture of the appendix with diffuse general peritonitis is extremely high. It is reported to be 57 per cent. The author observed that patients who develop fecal fistula usually recover whereas if fecal fistula do not develop convalescence is prolonged and stormy and accompanied by marked prostration and severe pain. Since 1924 Jones has treated seventy five cases of ruptured appendix complicated by general peritonitis by appendicostomy. The mortality was 1.4 per cent.

When appendicostomy is done the cecum and ascending colon are drained directly and the pressure is removed from the ileocecal valve. Gas and the other contents of the small bowel move outward through the appendicostomy tube. Peristaltic activity decreases and the patient becomes comfortable. As the result of the relief of the distention the blood supply of the small bowel tends to become normal. Beginning six hours after the operation the author instills from 200 to 300 c cm. of a physiological solution of sodium chloride into the bowel at intervals of two hours until the patient is able to take fluids by mouth. The tube is removed on the sixth or seventh day.

After the abdomen is opened the appendix is removed and a No. 16 F catheter is passed through an opening in the omentum and through the appendiceal stump into the cecum. The catheter is anchored by a suture of plain catgut placed through it and the appendiceal stump. Following inversion of the stump into the cecum a pursestring suture of silk or catgut around the appendiceal base is tied. The tube is brought out through a stab wound or the original incision. The primary wound is closed with or without drainage.

HERBERT F THURSTON M D

Rolland: Three Cases of Hemorrhage Following Appendectomy (A propos de trois cas d'hémorragies consécutives à l'appendicectomie). *Bull et mém Soc nat de chir.* 1934 **lx**, 449

Of 335 cases of appendicitis operated upon since 1929 at the Brest Maritime Hospital, intraperitoneal hemorrhage occurred in 3. The first of the latter was the case of a patient twenty five years of age who was operated upon June 8, 1932 for appendicitis of forty-eight hours duration. No abscess but a fetid serous exudate was found. No drainage was

established. Three days later peritoneal symptoms developed. On June 16 the operative scar ruptured and about 200 c cm. of blood escaped. The margins of the wound were freshened and a large quantity of blood and fetid clots removed from the cecal region and the pouch of Douglas. Below the cecum there was a blackish area in which blood was oozing in a visible jet from 2 or 3 arterioles. A Mikulicz tampon with gauze saturated in hemostyl was applied. Recovery resulted after a transitory cecal fistula and purulent pleurisy.

In the second case of intraperitoneal hemorrhage the operation was performed on the second day of a severe attack of appendicitis. The abdominal cavity was found filled with a fetid serous exudate. The intestinal loops were red and covered with false membranes, and there was a large retrocecal abscess. A gangrenous appendix was removed and a drain placed in the abscess. The drain was removed on July 21. On July 26 a stercoral fistula developed. On July 31 thirteen days after the operation, a severe hemorrhage occurred in the subcecal region after a slight attack of pain. At a second operation the clots were removed and jets of blood were seen issuing from several small arteries. The introduction of a Mikulicz tampon was followed by recovery.

In these 3 cases the hemorrhage could not be ascribed to faults in technique. The hemorrhages occurred in highly infected foci of gangrenous appendicitis, where the smaller arterioles of the wall were involved. When the scars gave way the hemorrhage broke loose. In cases of this type the use of a Mikulicz tampon gives good results. It would be useless to attempt ligation of the vessels in such a necrotic area.

The third case of intraperitoneal hemorrhage reported was that of a patient who had had many attacks of appendicitis and was operated upon during one of them about thirty-six hours after the onset. When the abdomen was opened a foul smelling serous fluid escaped and at the apex of the retrocecal appendix a small abscess was found. The abdominal wall was incompletely closed about a drain extending to the abscess. The following day flatus was passed, the drain was removed and the temperature was found normal. Four days later the operative wound began to bleed. On attempting to unnae the patient felt a sudden violent pain in the epigastric region and the left loin. Thereafter he vomited some slimy matter and a little blood mixed with pus escaped from the wound. The wound was cleaned and the bleeding seemed checked. A dressing soaked in hemostyl was applied. However the dressing was soon again stained with blood. The pulse rose to 140, respiration became rapid the abdomen distended, and the patient very distressed. Morphine was injected. Shortly thereafter the pulse became almost imperceptible and the face cyanosed. A transfusion of blood was administered, but death ensued. Autopsy revealed an abscess filled with dark pus in the ascending mesocolon in the tract of the right colic artery, not far from the right angle

of the colon. The cavity was the size of a small orange. The cause of the hemorrhage was found to be the rupture of one of the branches of the right colic artery. There were no signs of thrombosis.

The author states that it is not always easy to find the source of the hemorrhage in these cases. In the third case cited the infection probably extended along the glands by the posterior lymphatics of the ascending colon, forming an abscess which on coming into contact with the artery caused it to ulcerate and rupture. In this case the condition progressed too rapidly for surgery to be of avail.

EDITH SWANBERG MOORE

Bénigne, J.: *Nicolas-Favre Disease and Strictures of the Rectum (Maladie de Nicolas-Favre et rétrécissements du rectum)*. *Presse méd.* Par 934 tin 376

During the last two years much progress has been made toward demonstrating the direct relationship of lymphogranulomatosis inguinale to inflammatory strictures of the rectum. Ravaut, Levaditi, Lambing, and Cachero were able to produce a typical meningio-encephalitis in a monkey by inoculating material from an acute ulcerovaginitis proctitis. In a case of well-developed stricture, Laedrich, Levaditi, Mamou, and Beauchêne obtained a similar result. To eliminate secondary infection, a guinea pig was inoculated subcutaneously with a fragment of rectal mucosa. Later the inguinal lymph nodes were excised, ground and injected intracerebrally into a monkey.

To establish the diagnosis, reliance has been placed chiefly on the Frei reaction. As experience accumulates it becomes more and more evident that the reaction is definitely specific. However, as it may be negative early in the disease, it should be repeated. The author is reluctant to abandon completely the theory that syphilis, tuberculosis, gonorrhea and chancroidal infection can cause strictures. He believes that when these diseases are combined with a positive Frei reaction they should not be disregarded. Whenever the etiology is in doubt, a monkey inoculation should be done.

Sodomy as a mode of infection is believed to be much more important than has been supposed heretofore. It is possibly more important than lymph stasis and retrograde involvement of the rectum.

The lesions consist of an ulcerative proctitis followed by stricture. The development of the stricture may occur early or late. The inflammation always extends to the perirectal tissues, and by obliterating lines of cleavage makes surgical treatment most difficult.

Occasionally an elephantiasis-like edema of the perineum accompanies the rectal lesions. This condition is described in the older literature as "elephantiasis." It appears to be less commonly observed in France than elsewhere.

Dumitriu has called attention to nephritis as a frequent complication of infiltrative proctitis. Such association was not common in the author's cases.

The treatment of early cases of rectal lymphogranulomatosis consists of the usual measures that have always been employed in ulcerative proctitis. The results are ordinarily good and may be entirely satisfactory. After stenosis has developed, frequent dilatations, diathermy and even surgery become necessary. Colostomy is the first procedure to be undertaken when the stricture is tight. By persistent local treatment to combat infection and by dilatation and diathermy it is often possible to obtain marked improvement. However in many cases the lesions are rebellious and continue to progress.

Dumitriu and Stora reject colostomy entirely and perform an abdominoperineal transanal resection of the rectum (Villard's operation). In twenty-five cases there were three deaths and three recurrences. Nineteen of the patients were cured. However four had been treated only a short time before the report was made. Villard's operation is not feasible when the inflammatory changes extend to the lower rectum, as is frequently the case. Under such circumstances the only possibility is the standard abdominoperineal operation with the establishment of an iliac colostomy or the latter operation alone.

ALBERT F. D. GROUT, M.D.

Kilbourne, N. J.: *Internal Hemorrhoids. The Comparative Value of Treatment by Operative and by Injection Methods.* *Ann Surg.* 1934, vol. 60.

In an attempt to compare the value of operative and injection methods in the treatment of internal hemorrhoids, the author sent a questionnaire to 303 proctologists in America, Great Britain, France, and Germany. Fifty-seven replies gave definite information. Of these, 40 came from American proctologists.

The survey shows that in 36,618 cases treated by operation there were 11 deaths, whereas in 26,362 cases treated by injection there were no deaths. Hemorrhage followed operation in 0.573 per cent of cases, and followed injection in 0.299 per cent of cases. Stricture occurred in about 0.23 per cent of the cases treated by operation and in none of those treated by injection. After the use of injection methods recurrence developed in at least 15 per cent of the cases within three years. Sloughs occurred in about 1.09 per cent of the cases treated by injection.

NOAH C. BELLOCK, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Curillo, N.: *Experimental Studies on Hemostasis in Wounds of the Liver and Spleen by Tamponade with Catgut (Ricerche sperimentali sulla emostasi da ferita del fegato e delle milza mediante tamponamento con catgut)*. *Che chr.* 1934, 2, 109.

After a brief discussion of various methods of obtaining hemostasis in bleeding from abdominal viscera, Curillo reports experiments he carried out with regard to the control of hemorrhage from wounds of the liver and spleen by tamponade with catgut. This

experimental study supplements a study he previously reported on hemostasis by means of catgut in wounds of the kidney. The studies on hepatic hemostasis were carried out on rabbits, and those on splenic hemostasis on dogs. The tamponade was done with ordinary catgut ligatures of Size 0 or 00 prepared according to the technique previously described. The ligatures were softened to a gelatinous consistency in warm sterile water and then moulded into a wad the approximate size and shape of the wound into which they were to be plugged. At laparotomy the spleen or liver was held in the fingers and an incision made in it or a wedge removed from it. The wound was then tamponed with the catgut wad and its edges were approximated with a few stitches of No. 00 catgut.

Of twenty-one animals so treated, two dogs and two rabbits died but in no instance was the death due to hemorrhage. The other animals were killed after varying intervals up to five months after the operation and the condition of the wound in the spleen or liver was determined histologically. The article contains seventeen photomicrographs.

Throughout this study Cirillo found that catgut tampons stopped hemorrhage quickly and completely provided they filled the cavity accurately. He emphasizes that the most rigorous asepsis must be observed as otherwise an excessive fibrotic reaction takes place in the scar. Hemostasis occurs in about a minute after the catgut is plugged into the wound. Cirillo believes that catgut has a favorable effect on all the ferments which produce coagulation of the blood. Histological examination showed that absorption of the catgut usually began in about forty hours and was complete after about five months. The catgut was replaced by a cellular exudate, granulation, and finally connective tissue. Cirillo was unable to find the giant cells which have often been reported. The wounds in the organ were healed by the end of thirty days and had usually disappeared completely by the ninetieth day. Calcareous deposits were often noted between the parenchyma of the organ and the granulation tissue of the scar but in Cirillo's opinion they were of no significance.

From his observations Cirillo concludes that the described technique of hemostasis offers much promise for adoption into clinical surgery.

EUROPE T. LEBDY, M.D.

Rufanov I.: Liver Stones (Ueber Lebersteine). *Soviet Chir.* 1933 iv 623.

Liver stones are extremely rare. To date, there have been reports of only a few cases in which they were found at operation for hepatic abscess or at autopsy. In 1891 Courvoisier was able to collect only 30 cases. In the more recent literature a few cases have been reported by Koerte and in Russia by Romancer, Grammuck, Matrosov, Hesse and Jukelson.

Rufanov has collected 57 cases—16 reported in Russia and 41 in other countries. Five were cases of his own. Of the 41 cases in which the stones were

found at operation, the operation was followed by cure in 16 and by death in 25. In 16 cases the stones were first found at autopsy.

The anatomical changes in the liver are varied. There may be isolated foci with firmly fixed stones, isolated foci in which the stones lie in a cavity filled with bile or pus, larger foci with involvement of the extrahepatic biliary passages and the presence of thick masses or stones in the finer bile passages and suppurative cholangitis with multiple abscesses and small stones in the parenchyma of the liver. The liver is usually enlarged and its borders are hard. It may appear dark blue, anemic or yellow. The entire liver may be enlarged or only one lobe. The affected part of the liver is filled with pus, bile or small stones. The intrahepatic biliary passages are wide and filled with pigment and the parenchyma of the liver shows proliferation of connective tissue (pericholangitis).

The gall bladder sometimes presents marked changes similar to those of cholelithiasis. The bile may be dark, mucoid, or purulent, and may contain clumps of pigment and a large amount of cholesterolin. In some cases white bile has been found.

Frequently the neighboring organs are affected. As a rule there are adhesions to the stomach and less frequently to the intestine and between the gall bladder and liver. The extrahepatic biliary passages are dilated and sometimes filled with stones. The gall bladder showed acute ulcerative cholecystitis in 40 per cent of the cases, atrophy in 20 per cent and adhesions and scars in 20 per cent. The stones varied in number from 1 to approximately 1,000. Often it was impossible to count them. The size of the stones varied from that of a grain of sand to that of a hen's egg. Sometimes all of the biliary passages were filled with thick granular masses. The stones may be gray white, yellow green, brown, or black, round, oval, polyhedral, or faceted. Their chemical character varies. They may be composed of bilirubin and cholesterolin in varying proportions. In addition, they may contain calcium magnesium salts and pigment. M. SILBERBERG (Z).

Berget A., Caroll, J. and Audéoud R.: Splenectomy in Cirrhoses of the Liver (La splénectomie dans les cirrhoses du foie). *Rev. de chir.* Par. 1934, lvi 111.

On the basis of a series of cases of cirrhosis of the liver reported in the literature and one case of their own in which splenectomy was strikingly beneficial, the authors attempted to determine the indications for splenectomy in this condition. They found that good results followed splenectomy in cirrhoses of unknown cause occurring in young persons. In all of the cases the spleen was enlarged. The symptoms which particularly indicate surgical intervention are crises of hepatic pain, hemorrhage, anemia, jaundice and pruritis. Even in the presence of marked ascites and profound impairment of the general condition, splenectomy has yielded excellent results.

LEO M. ZACHARWAK, M.D.

Abel, A. L.: Primary Carcinoma of the Liver with the Report of a Case Successfully Treated by Partial Hepatectomy. *Brit J Surg* 1934, xxi, 664.

In the liver primary carcinoma is rare whereas secondary carcinoma is extremely common. In Europe and North America primary carcinoma of the liver has been found in only from 0.1 to 0.3 per cent of all autopsies. In the Philippines and South Africa it is much more frequent, a fact suggesting that parasitic infections of the liver and gastrointestinal tract may be etiological factors. Cirrhosis of the liver may also play a part in its development.

The symptoms are those of portal obstruction. Mentioned in decreasing order of their development the chief symptoms are icterus, ascites, oedema, especially of the lower extremities, enlargement of the spleen and pyrexia. The liver is usually enlarged, painful and tender. Liver-function tests are of little aid in the diagnosis.

There are few cases of early operation on record. The results of operation should be best in cases of solitary adenoma which can be adequately excised.

The case reported by the author was that of a man fifty-one years old who first noticed a lump in his abdomen seven days before he sought treatment. Examination disclosed a mass about the size of a rugby football in the center and right side of the abdomen. On exploration under spinal anesthesia this was found to be a large tumor arising from the left lobe of the liver. The left lobe of the liver was displaced downward and to the right. The right lobe appeared quite normal. As a complete search of the entire abdomen failed to disclose a primary focus it appeared probable that the tumor was primary in the liver. Removal was accomplished without great difficulty. The neoplasm weighed 5 lb. Histological examination showed it to be an adenocarcinoma of the intrahepatic ducts which had probably arisen from multiple foci representing a transition from simple adenomata.

The patient made an uneventful recovery from the operation and remained well for nine months. He then had an attack of fever with slight jaundice. He recovered from this attack also but subsequent examination disclosed marked enlargement of the liver with ascites.

HARRY W. FICK, M.D.

Lombardi, R.: Acute Cholecystitis and Hepatic Lesions (Colerazion acuta e lesioni epatiche). *Arch Ital di chir* 1933, xii, 1509.

Following a brief review of the literature, Lombardi presents the results of experiments carried out on dogs to determine the relationship between acute bacterial and bacterial inflammations of the gall bladder and changes occurring in the liver. In two series of experiments he injected 1 or 2 c.c.m. of a culture of bacillus coli or staphylococcus aureus and in another series introduced several pieces of sterile glass into the lumen of the organ. After varying periods of time the animals were sacrificed and the gall bladder and liver examined.

In all of the experiments a hyperplastic cholecystitis resulted but in the experiments in which only sterile pieces of glass were introduced into the lumen of the organ there were no associated changes in the parenchyma of the liver. In the experiments with bacteria, examination after from ten to twenty days showed the liver lesions to be few and to consist of a slight infiltration of the interlobular spaces and some connective tissue reaction. After from thirty to forty days, increased infiltration was found, especially in the spaces of Kiernan there was a large amount of new connective tissue especially in the interlobular spaces and the hepatic cells presented retrogressive changes even to complete disappearance with replacement by connective tissue. In only one instance were small pyogenic foci found in the new connective tissue.

The author states that the hepatic lesions are probably the result of toxic action rather than direct bacterial action. When bacteria occasionally gain access to the liver they produce foci of suppuration.

From his findings Lombardi concludes that early intervention is desirable in acute cholecystitis in order to prevent marked liver damage, as it is possible that damage to the liver is responsible for the symptoms which persist after late surgical intervention such as is generally practiced today.

A. LOUIS ROSE, M.D.

Schimmel, B.: Progress Is Attained Not Only by New Discoveries But Also by Moving from Error to the Truth. Apropos of Cholelithiasis (Il progresso non si raggiunge solo con lo scoprire il nuovo ma anche col muoversi dall'errore verso la verità. A proposito della calcolosi della cistifellea). *Pulsio* Rome, 1934, xii, sez. cliv. 33.

While cholecystectomy is the procedure most widely used today in the treatment of cholelithiasis, it is often followed by persistence of the distress. The author therefore believes that in uncomplicated cases the procedure of choice is cholecystostomy, i.e. removal of the stones from the gall bladder followed by resture of the organ. This operation is of advantage over cholecystectomy because it is easily performed, its mortality is lower. It does not cause injury or stricture of the common duct, and it is not followed by dilatation of the bile passages or changes in the parenchyma of the liver.

Three hundred and forty-one cases in which cholecystostomy was performed with good results are reviewed.

The author advises cholecystectomy for stenosis of the cystic duct, carcinoma, gangrene and perforation.

PETER A. ROSE, M.D.

Ransome, H. K. and Malcolm, K. D.: Obstructive Jaundice Due to Diffuse Contracture of the Extrahepatic Bile Ducts. *Arch Surg* 1934, lxxviii, 114.

Acquired strictures of the extrahepatic bile ducts may be divided into two groups, the traumatic and

the inflammatory. The majority of the traumatic strictures are the result of injury to the hepatic or common duct during cholecystectomy. The injury may consist in severance, ligation, or the excision of a segment of the duct, a wound of the duct leading to the formation of an external biliary fistula with subsequent cicatrization, or, most commonly, the placing of the ligature of the cystic duct too close to the common duct so that, when tied, it compromises the lumen of the latter. The suggestion has been made that in some cases an abnormal amount of scar tissue may develop about the duct from the use of too large or too heavy gauze drains with the ends left close to the ducts.

The inflammatory variety of acquired stricture is commonly attributed to a localized cicatrix caused by ulceration of the mucous membrane produced by the passage of a gall stone or injury from the impaction of a stone in the wall of the duct followed by contraction of the scar tissue during the healing process. As a rule inflammatory strictures are quite localized, being found in a duct which at other points is normal. By some it is believed that in many so-called acquired inflammatory and traumatic strictures the process is fundamentally an obliterative cholangitis.

SAMUEL KAHN M D

Bustos, J. M. O.: Latent Diseases of the Pancreas (Pancreopatías latentes). *Rev Méd d Rosario* 1934, xiv, 10.

The author discusses findings indicative of pancreatic disease masked by clinical syndromes of more familiar and readily accessible organs. Pancreatic function has been found by him to be changed in from 70 to 80 per cent of cases of gall-bladder and liver disease. It was investigated by chemical analysis of pancreatic juice obtained by means of a duodenal tube, microscopic examination of the feces for fat, chemical examination of the feces for amylase, trypsin, and lipase, quantitative estimations of amylase in the urine and blood, and determinations of the content of atoxyl resistant pancreatic lipase in the blood.

The content of pancreatic juice in the material aspirated through the duodenal tube may be increased by the administration of stimulants to pancreatic secretion. The substances employed by the author were ether, skimmed milk, hydrochloric acid, histamine, insulin, and secretin. The most efficient pancreatic stimulants were found to be ether and skimmed milk administered after emptying of the gall bladder by a large dose of magnesium sulfate.

The ferment most indicative of pancreatic function was duodenal lipase. Next in importance were the amylase in the urine and the pancreatic lipase of the blood which is resistant to atoxyl.

In conclusion the author states that by means of the described methods of investigating pancreatic function it is possible to recognize very early changes in the pancreas which otherwise would be latent.

WILLIAM R. MEYER M D

Dragstedt L. R., Haymond H. E. and Ellis, J. C. The Pathogenesis of Acute Pancreatitis (Acute Pancreatic Necrosis). *Arch Surg* 1934, xlviii, 332.

While edema and hemorrhage of the pancreatic parenchyma are probably frequent in acute pancreatitis and may represent early stages of the disease, the significant change in the condition is necrosis. Collapse and death do not occur unless the edema is succeeded by necrosis.

No single theory of the origin of acute pancreatic necrosis is satisfactory as the condition may result from several processes. The most common of the latter is the entrance of infected bile into the pancreatic duct. As a rule this occurs secondarily to biliary tract disease. The method by which the bile enters the pancreatic duct is problematical, particularly as the authors have demonstrated that the pressure in the pancreatic ducts exceeds the pressure in the biliary channels.

The entrance of infection by way of the lymphatics is a possible, although not a common cause of pancreatic necrosis. Approximately a third of the cases reported have shown no evidence of biliary tract disease. The fact that in many of them the condition occurred in association with mumps, typhoid, appendicitis, scarlet fever, or diphtheria suggests a hematogenous origin.

Typical pancreatic necrosis may be caused by trauma alone.

The authors have demonstrated that pancreatic juice as well as trypsin and lipase may be poured into the peritoneal cavity without consequent fat necrosis. They state that the pancreas may be exposed to the gastric juice by suturing it into a window in the gastric wall or exposed to the duodenal juice by suturing it into a window in the duodenum without causing necrosis. Attempts to activate intraglandular trypsinogen were unsuccessful but the damping back of infected pancreatic juice invariably produced acute necrosis. It is possible that intestinal bacteria, particularly colon bacilli, produce proteolytic ferments which can activate trypsinogen even when enterokinase, the normal activator of trypsinogen, fails to produce necrosis. Bile salts cause a local necrotizing effect in the pancreas which destroys the protecting colloids of the tissue. Proteins are therefore exposed and promptly digested by the tryptic protease of the pancreatic juice with resulting necrosis.

This theory explains only 60 per cent of the cases of pancreatic necrosis. The other cases are due to infections, trauma, or duct obstruction.

Death in acute pancreatic necrosis is due in some way to a toxemia arising from the diseased pancreas. Extracts of a necrotic pancreas are exceedingly toxic when they are injected into the abdominal cavities of animals. The nature of the toxic substance is not known. Many investigators have demonstrated that inactive pancreatic juice when poured into the peritoneal cavity does not cause inflammation or marked toxemia. The authors veri-

fied these observations by draining the main pancreatic duct into the peritoneal cavity by means of a catheter. No symptoms of toxemia appeared, and at necropsy from five to sixty days later no pathological changes other than a few small areas of fat necrosis were discovered.

Other investigators have found that when the trypsinogen in the pancreatic juice is activated, a small quantity of the fluid is rapidly fatal. In an ingenious series of experiments the authors demonstrated that when trypsinogen activated by succus entericus was allowed to drain into the peritoneal cavity freely, no inflammation or signs of toxemia appear provided the secretion was free from bacterial contamination, whereas when the same solution was collected and kept free from preservatives or unheated, it rapidly became exceedingly toxic. When, in experiments on eight dogs, succus entericus was allowed to drain freely into the peritoneal cavity seven of the dogs showed no ill effects. When the catheterized pancreatic duct drained its secretions along with the succus entericus, five of the seven dogs died within three days and all showed generalized peritonitis and extensive fat necrosis. In each case bacteria were cultured from the experimentally created jejunal patch. When the activated pancreatic juice was introduced into the peritoneal cavity no fat necrosis or peritonitis was apparent at necropsy. When the same solution was sterilized by passage through a Berkefeld filter and injected intraperitoneally in quantities as large as 149 c cm. no toxemia or marked fat necrosis was found.

These experiments demonstrate that succus entericus inactivated and activated pancreatic juice may be poured into the peritoneal cavity without serious consequences provided the solutions are sterile, but when the solutions are infected, pancreatic juice rapidly provokes toxemia and fat necrosis. The infective organism was usually the bacillus *weichi*.

The authors have demonstrated that the majority of healthy rabbits and dogs have viable bacteria in their pancreatic tissues. One half of, or even the whole, pancreas may be placed in the abdominal cavity of an animal without serious sequelae provided the pancreas is not contaminated. Extracts of autoclaved pancreas have also proved innocuous. When the pancreas is infected, its introduction into the peritoneal cavity rapidly proves fatal. Apparently then, the digestion of the pancreas in the peritoneal cavity does not produce toxaemic end-products, but these products develop rapidly when bacteria are present in the tissue so introduced.

The authors conclude that bacteria are necessary for the development of toxemia from pancreatic necrosis.

STANLEY H. MENTZER, M.D.

Tripodis, A. M. and Sherwin, C. F.: Experimental Transplantation of the Pancreas Into the Stomach. *Arch Surg* 1934 LVIII 343

Present knowledge of diseases of the pancreas and their surgical treatment are hardly any further ad-

vanced today than they were fifty years ago. In experimenting with the pancreas many important problems must be solved.

Guided by the work of Coffey the authors undertook experiments on 72 dogs in which they attempted to implant the pancreas in the stomach. Their purpose was to devise, by direct surgical attack, a rational method of treatment for certain cases of injury involving either the tail or the head of the pancreas and for cases of early tumor growth involving the head. Great care was taken to prevent leakage of pancreatic fluid and to dispose of the severed or injured end in such a manner that both the internal and external functions of the gland would be preserved.

In the first experiment the distal end of the pancreas was severed and the cut end implanted into a pocket beneath the gastric musculature. The tail of the pancreas wall adhered firmly and no digestion of the walls of the pocket occurred. In the second experiment the tail of the pancreas was implanted into the stomach. In the third experiment this procedure was repeated and, in addition, the main pancreatic duct was divided and ligated. In the fourth experiment the head of the pancreas was implanted into the stomach, and in the fifth the head and neck of the pancreas were removed and the stump was implanted into the cavity of the stomach.

Three of the dogs were allowed to live for from nine to ten months. The dogs were fed a mixed diet. Gastric analysis showed the pancreatic lipase to be strongly positive in all of the experimental dogs and absent in the control dog. In the cases of two dogs, trypsin was found in the stomach. The blood sugar was not markedly abnormal and the urine never contained sugar. Examination of the specimens showed the lumen of the pancreatic duct to be continuous into the stomach. There was no evidence of a pathological reaction within the wall of the stomach or mucosa.

The authors conclude that the pancreas may be successfully implanted into the stomach with preservation of its internal and external functions.

EARL GARRETT, M.D.

Zappalà, G.: A Contribution to the Study of the Functional Relationships Between the Spleen and Bone Marrow. (Contributo allo studio dei rapporti funzionali tra milza e midollo osseo). *Pedidia Roma*, 1934, XII, ser. chir. 39

According to the findings of Donatelli who experimented with intravenous inoculations of bacillus typhosus in rabbits, the spleen like the bone marrow is stimulated to hematopoietic function in such a way that there seems to be a direct correlation between the two tissues. This correlation in the infectious diseases is not clear.

In experiments on normal and splenectomized rabbits subjected to infection with bacillus coli and bacillus typhosus, the author noted certain characteristic changes. The activity of the myelopoietic elements in the bone marrow and of the lymph nodes

and the number of leucocytes were greater in the splenectomized animals than in the animals not subjected to splenectomy. In some of the former, the number of leucocytes was increased as much as thirty times the normal. The analogy of this finding with the leukemia like state in man was brought out even more by the qualitative nature of the blood, for in many of the animals the blood contained numerous myelocytes, myeloblasts and normoblasts.

In man, such a leukemia-like state often produces a condition which may be described as a reticulo-endothelial paralysis. A clinical example is pneumonia in which macrophage formation is inhibited (absence of a splenic tumor) and there is an intense excitation of the myeloplastic tissue resulting in a leucocytosis with many young and even immature forms of leucocytes. The author believes that the condition he found in the splenectomized rabbits after inoculation with bacteria closely approximates the condition in a clinical case of acute infection in which leukemia develops. He concludes that the spleen acts as an inhibitory force on the bone marrow and that when it is removed or is paralyzed by infection an intense myeloid reaction results because of the unlimited stimulation of the bone marrow.

A. LOUIS ROSE, M D

Mauro, M: A Contribution to the Study of the So-Called Hematic Cysts of the Spleen (Contributo allo studio delle così dette cisti ematiche della milza). *Ann Ital di chir* 1933 xli 1547

Mauro says that the correct term for the cysts discussed is encysted intrasplenic hematomata as it indicates their cause and includes both the central and subcapsular varieties, whatever their origin and stage of development and all cases reported as late hemorrhage from traumatic or spontaneous rupture. From the literature of the past ten years he has collected fifty cases, all verified anatomically, on which he bases a comprehensive discussion of splenic hematomata, including their etiology, pathology, evolution, clinical syndromes, differential diagnosis, and operative treatment.

A classification which emphasizes the pathology and diagnosis and simplifies the nomenclature of the diverse syndromes according to the stage of the lesions is the following:

- 1 Acute recently formed blood cysts, very similar symptomatically to complete rupture of the spleen
- 2 Subacute cysts in the process of organization with repeated crises due to secondary hemorrhages.
- 3 Chronic cysts organized and growing slowly and painlessly

With regard to the etiological importance of trauma, Mauro states that a healthy spleen normally located and not affected by altered vessels in the vicinity can be injured only by severe trauma, whereas a spleen in which the pulp has been previously altered by acute splenitis, passive congest-

tion, or premature atrophy may be injured seriously by very slight trauma. Spontaneous ruptures outnumber truly traumatic ruptures. They occur more frequently than is realized under the force of a sudden massive hyperemia, especially in malaria, typhoid, and the septicemias in general. The firmly encapsulated hematomata are more often of non-traumatic origin.

In the clinical discussion Mauro emphasizes particularly the signs and symptoms left after the initial crisis has abated or occurring without an initial crisis and their importance for the diagnosis of latent cyst. He stresses also the repetition of the initial syndrome in less severe form as crises of colic, during one of which the cyst may rupture.

In the stage of intrasplenic hemorrhage or secondary rupture of the cyst the diagnosis may be easy but particularly if a history of trauma is absent, it may be very difficult. As the diagnosis of a blood cyst is made, operation is indicated. When the beginning of an intrasplenic hemorrhage is encountered, whatever its origin, an emergency operation should be undertaken after the shock has subsided. Only exceptionally in these cases does the hematoma become well encysted.

Splenectomy is always the operation of choice if it is technically possible without compromising the patient's strength. However if the cyst is voluminous and densely adherent and the patient is in a precarious condition, only marsupialization of the sac may be practicable.

According to statistics the results of operations for well-encapsulated cysts are remarkably good whereas the mortality of splenectomy for traumatic rupture is high. The mortality of operations performed at the outset when the hematoma has scarcely formed as well as of those for secondary rupture is about 40 per cent.

Mauro reports a case of spontaneous rupture of an intrasplenic hematoma during an acute general infection of unascertained nature in a man thirty-seven years of age who had had typhoid nineteen years previously. When the patient was first seen, the clinical picture was typical of a large blood cyst in the subacute stage. Because of the dense adhesions and the patient's condition, only evacuation of the cyst was possible. Satisfactory recovery resulted.

The article has an extensive bibliography

M. E. MORSE, M D

MISCELLANEOUS

Victor A. C. The Anatomical Basis for the Study of Splanchnoptosis: The Paths of Visceral Descent. A Preliminary Report. *Arch Surg* 1934 xcvi 659

The fundamental step in splanchnoptosis is incompetence of the abdominal walls due to failure in the development or co-ordination of the complex reflexes through which the muscles of these walls support the viscera by antagonizing gravity over

descent of the diaphragm, and persistence of the ventral binding of the extremities to the trunk. The next step is forward projection of the viscera and shallowing of the paravertebral fossae. This forward projection of the viscera marks the preparatory stage of *splanchnoptosis*. The next step is the essential stage of descent of the viscera and of traction on their intervisceral and parietal attachments, on their nerves and blood and lymph vessels, and on the related body walls. All changes in position of the viscera cause corresponding changes in the body form.

"The viscera may be displaced *en masse* or individually or in varying combinations. No organ or structure is exempt, but the most easily displaceable individual viscera are the kidneys, the stomach, the redundant portions of the colon, the liver, the lungs, and the heart. When the kidneys and suprarenals are projected forward, they enter on the lumbodilac inclined planes which furnish direct and inviting paths for descent. As the kidneys descend, they separate from the suprarenal glands, in the intervisceral attachments elongating and making traction on the suprarenal glands which, themselves, elongate but remain fixed. Traction is also made on all the structures of the hilt. The distending stomach normally finds a descending oblique plane which guides it downward, forward, and to the right, though its fundus remains under the left vault of the diaphragm. Ptosis occurs to a greater or less extent along the same path, but continuing descent causes elongation of the body of the stomach, the lower part of this portion descending below the

antrum which remains high thus developing the characteristic pipe-bowl shape. The movable part of the first portion of the duodenum tends to share in the movements of the antrum, and it may undergo traction, pressure, kinking, torsion, or obstruction. The spleen tends to descend with the stomach and to elongate its lowest portion becoming tongue-shaped and extending downward and forward on the splenic flexure. The transverse colon is always more or less redundant, forming one or more loops. When the loops are unfolded, they tend to descend, to exert traction on their attachments, and to cause kinking and stasis at their angles. Even a moderate descent may cause traction on the stomach, the first portion of the duodenum, and the neck of the gall-bladder. The liver remains under the right vault of the diaphragm but within the limits of its attachments it is subject to forward, backward, and lateral rotations. When the traction on its attachments exceeds its limitations, its tissues yield and it becomes wholly or partially elongated or otherwise modified in shape. The lungs always remain attached at their hilt, but descend by elongation or by other changes in shape as the thorax shares in the changes in body form and in the altered action of the diaphragm due to ptosis *en masse*. The heart, through the pericardium and the other firm mediastinal tissues, remains attached to the structures at its base, but it tends to rotate downward and from left to right toward the median line, the apex leading and the portion to the right of the median line also moving mediad."

WALTER H. NADLER, M.D.

GYNECOLOGY

UTERUS

Rongy A. J., Tamis, A. and Gordon, H. Interposition Operation for Procidencia Uteri, with a Report of 501 Cases. *Am J Obst & Gynec* 1934, xxvii 418.

In the majority of cases of procidentia uteri the procedure of choice is the interposition operation.

The authors review 501 cases in which the interposition operation was done at the Lebanon Hospital, New York. The first operation in these cases was performed by Dührssen in 1907 and the last by Rongy in December 1932. Three hundred and forty nine of the operations were performed by Rongy and 152 by 7 other members of the staff.

It has been established that the incidence of prolapsus uteri is just as high in women who are attended by physicians during the lying in period as in those who are attended by midwives; that easy labor does not prevent the condition and that difficult labor does not cause it. Therefore, ptosis of the pelvic viscera will occur in the future about as frequently as it has occurred in the past.

The most important single step in the interposition operation is proper gauging of the point of fixation of the anterior wall of the uterus to the anterior wall of the vagina.

The size of the prolapsed mass is not a contra-indication to the operation. The interposition operation can be performed successfully as long as the vaginal vault is not completely everted.

EDWARD L. CORNWELL, M.D.

Courty L.: Torsion of Uterine Fibroids (La torsion des fibromes utérins). *Gynécologie* 1934, xxviii, 41.

Torsion is a rare complication of uterine fibroids. A subserous pedunculated tumor may twist on the body of the uterus or may cause the body of the uterus to twist on its own axis (axial torsion). Two clinical varieties are distinguished, namely acute and chronic torsion.

The acute form usually occurs at the level of the uterine isthmus, the corpus being twisted on the cervix uteri, but may occur also at other levels. Approximately 100 cases of this condition have been recorded. The author reports 2 more.

The etiology of the condition is poorly understood. The topographical location of the tumor appears to be a factor of importance since torsion occurs almost exclusively in abdominal fibroids. The most probable predisposing factor leading to axial torsion is the elongation and thinning of the cervix which occurs in cases of myomata of the corpus. In some instances the cervix is thinned to a cord like structure. Mechanical factors such as sudden movements, pelvic examinations, distention

of the sigmoid by feces or gas and contractions of the abdominal muscles have been suggested as causative factors, but their importance is problematical.

Torsion occurs usually from left to right and varies from 90 to 360 degrees. The pathological picture is characterized by obliteration of the cervical canal or uterine cavity, subperitoneal hemorrhage extending often to surrounding organs, venous stasis and edema, and finally aseptic gangrene leading eventually to necrosis with secondary infection. The tubes, ovaries and round ligaments are congested and cedematous. A sero-sanguinous exudate is usually present in the abdominal cavity.

The symptoms of acute torsion are a sudden sharp pain in the lower abdomen, nausea, vomiting, syncope, and a rapid pulse. The temperature is normal or only slightly elevated. Examination of the abdomen reveals a hard, tender tumor mass. There is no muscle spasm. Vaginal examination discloses elevation of the fornices as in torsion of an ovarian cyst, and extreme tenderness on mobilization of the cervix. The cul-de-sac remains soft and non-sensitive.

The following 3 special clinical forms of acute torsion are distinguished:

1. A pseudo-hemorrhagic form with symptoms suggesting tubal pregnancy with intraperitoneal hemorrhage.

2. Torsion accompanied by intestinal occlusion and the signs and symptoms of mechanical ileus.

3. Torsion accompanied by symptoms of ileus without actual intestinal obstruction, in which a diagnosis is impossible.

4. An attenuated or subacute form in which the acute symptoms have subsided and only uterine tenderness remains.

5. Repeated twisting and untwisting with recurrence of symptoms at intervals of several weeks or months.

The prognosis for recovery depends chiefly on the degree of involvement and the time of surgical intervention. According to Hitzmanlades, the mortality without operation is 63 per cent and the mortality with operation 8 per cent. The author believes that early intervention will reduce the latter figure, and that operation should be performed immediately regardless of the state of shock. Shock can be relieved only by removing the torsion. Subtotal hysterectomy is the operation of choice.

The chronic form of torsion is an insidious process difficult to recognize. It is characterized by repeated crises of abdominal pain, nausea, and vomiting occurring at intervals of several weeks or months. Menstrual disorders due to obliteration of the

uterine cavity are usually present. Hematometra causes enlargement of the uterus simulating pregnancy. The diagnosis is usually made only at the time of operation. The treatment indicated is hysterectomy.
HAROLD C. MACK, M.D.

Noorris, C. C.: *The Diagnosis of Early Carcinoma of the Cervix*. *Am. J. Cancer* 934, 27, 295

The mortality from cancer of the cervix is far greater than is indicated by published statistics as the latter usually represent the best results. The predisposing factor in cervical carcinoma is the cervicitis which always develops after laceration. Therefore prophylaxis is very important. Early diagnosis is another very important factor in dealing with this disease because the prognosis depends on the stage of advancement.

In the early stage of the disease symptoms are few or absent. They may be ignored by the patient or she may have the inherent fear of cancer and the common belief that it is incurable and therefore delay seeking medical advice. Incomprehensible as it may seem one of the chief reasons why physicians fail to recognize the disease is their failure to make a pelvic examination.

Two aids in the diagnosis of early carcinoma of the cervix are the Schüller iodine test and the use of the colposcope. Areas which have not been stained by the iodine are not positive evidence of carcinoma but indicate points where biopsy should be done. For early diagnosis of carcinoma of the canal, a modification of the Clark test is valuable.

Considerable experience is necessary properly to interpret the pictures presented by the colposcope. The author reports the findings with this new instrument and discusses its advantages.

The final diagnosis is based on the findings of microscopic examination by a competent pathologist. However a negative result means only that no carcinoma has been found in the tissue examined. This shows the limitations of biopsy. Although invasion and alterations in the shape of the cells are histological characteristics of carcinoma, it is difficult to determine their presence in a given specimen because invasion and morphological changes are so often matters of degree. Even the most experienced gynecological pathologists differ regarding the criteria on which a diagnosis of extremely early carcinoma should be based. Several investigators have shown that cervical carcinoma usually has its origin in the transitional epithelium of the external os.

Leukoplakia is frequently followed by carcinomatous change. Although leukoplakia has been considered infrequent, Hinselmann has been able to demonstrate it in about 1 per cent of all patients examined with the colposcope.

In the author's cases most of the neoplasms appear to have had their origin at, or only slightly distal to, the point of transition between the columnar and squamous epithelium. The transition to malignancy was abrupt and sharply defined and the line of demarcation was usually oblique. Immediately be-

neath the new growth there was generally an inflammatory reaction. The superficial layer of epithelium was often absent or nonrecognizable. The prickle-cell layer was greatly changed. The nuclei were irregular in size, generally large, round, or oval, and deeply stained. A moderate enlargement of the nucleoli is stressed by some. In early neoplasms the basalis often shows marked and characteristic change. Epithelial pearls are suggestive but not diagnostic of carcinoma.

Simple papilloma, condyloma, hyperkeratosis, hypertrophy and epidermidization may offer difficulty in diagnosis as to their benign character. Leukoplakia which appears to predispose to the development of cancer can be readily differentiated from carcinoma by an experienced pathologist.

T. FLOYD BRILL, M.D.

Matousek, M.: *Radium in the Treatment of Uterine Carcinoma* (*Radium gegen Uteruscarcinom*). *Cas. lek. čes.* 1934 pp. 390-1215, 1240, 1503.

After a quite comprehensive review of the historical development of the radium treatment of uterine cancer the author discusses the methods of treatment used today in various institutions and then describes his own method. Important milestones in the development of the treatment of uterine cancer were the year 1907 when Dominko demanded the use of ultrapenetrating rays the year 1913 when, in many congresses, radium irradiation was discussed not only as palliative procedure but also as a therapeutic method in inoperable cases and the period immediately after the world war when radium treatment began to compete with surgery.

In the discussion of the methods of treatment used today attention is directed first to the French school. On the one hand there is the school of Regaud and Lacazeigne which has spread the theories of Dominici and his pupils, Wickham, Degrais, Chéron, and Rubens-Duval advocates moderate doses of radium equally divided between the uterus and vagina, heavy filtration, uninterrupted periods of treatment of moderate length and a total dosage of 8,000 mgm.-units and rejects excochleation. On the other hand there is the school of Nabias who, on the basis of his studies of the value of the karyokinetic index with regard to the radiosensibility of tumors, uses small amounts of radium over a long period of time.

The author next describes in detail the methods of Forsell and Heymann of Sweden which are based on the teachings of Rubens-Duval and Chéron—the use of large amounts of radium divided in the ratio of 40:50 between the uterus and the vagina, heavy filtration, relatively short periods of treatment repeated two or three times at intervals of one or two weeks, a total dose of from 6,000 to 7,000 mgm.-units, and no excochleation.

The methods of other institutions and nations are described only very briefly. Matousek states that Seubert was the first to give a carcinoma dose of

6,000 mgm.-units. Warnekrose and Bumm were the first to advocate combined radium and roentgen treatment and Kroenig was the first to use percutaneous irradiation. Decker urges irradiation treatment for all squamous-cell carcinomata but for only inoperable adenocarcinomata. Schmitz recommends Doederlein's division into stages. Regaud has accepted Winter's rules for comparative statistics. Petersen warns against excochleation because of the danger of metastases. The method of choice is the complete uterovaginal application at several points of relatively large amounts of well filtered radium. Radium puncture and the radium surgery which has been developed especially by the Belgians are considered of only slight value.

On the basis of his own successful results from irradiation treatment and those of others, and taking into consideration especially the low primary mortality associated with irradiation, the author concludes that radiotherapy deserves the same recognition as operation even in operable cases of carcinoma of the uterus. A disturbing factor is the occurrence of metastases after local cure but Matoušek believes that this is no less frequent after operation. His own method of treatment is as follows:

After three days of preparation by vaginal douches of chloramin or potassium permanganate and evacuation of the bowels, the external genitalia and the vagina are disinfected and excochleation, cauterization and dilatation of the cervical canal are done. The corpus is then curetted and the radium treatment is begun immediately thereafter. The curettage is done for diagnostic purposes and the excochleation to bring the irradiation nearer the carcinoma. From 4 to 6 applicators with tubes containing from 10 to 20 mgm. of radium element are employed. In advanced cases and cases of carcinoma of the corpus, 20-mgm. tubes are placed in the uterus or a 10-mgm. tube is placed in the uterus, a 20-mgm. tube in the cervical canal, a 10-mgm. tube in the vagina, and a 20- or 10-mgm. tube in front of the portio. The filtration equals 1 mm. of platinum. Secondary filters or applicators are used for the uterus and a rubber drain with 2 mm. walls, the rubber of a Niabes pessary or 5 mm. of cork for the vagina. The pessary is shown in an illustration. It is a ring pessary with lateral projections to hold the container in the vagina. The treatment is continued for from three to five days according to the amount of radium used and is usually carried out at one time. The total dose is 6,000 mgm.-units. Occasionally an additional vaginal dose of from 2,000 to 3,000 mgm. units is given after an interval of from six to eight weeks. In addition there is given at the same time a roentgen treatment of the parametrium in 4 fields in cervical carcinoma and in 5 fields in carcinoma of the corpus, with a dosage of from 750 to 780 r for each field. The parametrium is treated also by the injection of from 5 to 10 c.cm. of an oily emulsion of emanation of activated silver or of tungsten which contains radia-

tions in the parametrium for a long time and block the spread of the carcinoma cells through the lymphatics. FARRER (G)

McEwan P: A Study of Hysterectomy *Brit M J* 1934 i 574

The investigation reported in this article was undertaken to determine the end-results of hysterectomy from the standpoint of the patient's satisfaction with the operation, the severity of the menopausal symptoms, the justification for removal or preservation of the ovaries, changes in sexual feeling and sex relationship and the frequency of post-operative obesity.

The indication for the operation was endometritis with salpingo-oophoritis and endometriosis in 67 cases, fibroids in 37 cases, malignant disease of the fundus of the uterus and postmenopausal hemorrhage in 2 cases each and carcinoma of the cervix, placental mole, bilateral pyosalpinx, and bilateral retroperitoneal cysts in 1 case each.

A vaginal hysterectomy was done in 4 cases, a subtotal hysterectomy in 98 and panhysterectomy in 10. Both appendages were removed in 91 cases and both were preserved in 12.

After the operation 109 of the patients were restored to health and 3 were in indifferent health.

The precise indication for hysterectomy varies according to the point of view of the surgeon. Among the cases reviewed there was only 1 case of cancer of the cervix. All other cases of this condition were treated by irradiation. Some uncomplicated cases of severe menopausal hemorrhage were also treated with radium, and certain cases of fibroids were treated by myomectomy instead of hysterectomy. The relatively large group of patients treated by hysterectomy for endometritis, salpingo-oophoritis, and endometriosis included women whose health was undermined by recurring pelvic pain, dysmenorrhea and menorrhagia and whose physical and nervous energy had been exhausted by menstruation.

The 4 women treated by vaginal hysterectomy made a speedy recovery. When the cervix is badly torn, panhysterectomy is preferable. Leucorrhœa was cured in 45 of the 50 cases in which it occurred as a pre-operative complaint. Its cure did not seem affected by removal or preservation of the cervix. Conservation of ovarian tissue did not modify the severity of the menopausal symptoms, the occurrence of obesity or the loss of sexual feelings. Menopausal symptoms were negligible in 27 per cent of the cases, slight in 16 per cent, moderate in 25 per cent and severe in 32 per cent. The constant feature in severe cases was pre-operative exhaustion of the nervous system. Women under forty years of age were more than twice as liable to obesity as women beyond that age. The author states that hysterectomy does not unsex a woman as femininity can develop without the uterus and ovaries and may persist after their removal. Frequency of micturition was cured by hysterectomy in 93 per cent of the

cases reviewed and backache in 90 per cent. The mortality in the entire number of cases in which hysterectomy was done was 1.5 per cent.

ALICE F. MAXWELL, M.D.

ADNEAL AND PERIUTERINE CONDITIONS

Bergstrand H. The Nature of Virilizing Ovarian Tumors (Ueber die Natur der virilisierenden Ovarialtumoren). *Acta obst. et gynec. Scand.* 1934, vol. 336.

Following a review of some of the literature on ovarian neoplasms producing male characteristics in women, the author describes four ovarian tumors causing hirsutism in cases observed by him and reports the findings of his microscopic examination of a tumor reported by Berner and a tumor reported by Straumann. In two of his own cases he proved the growth to be a folliculoma or a granulosa-cell tumor especially as the strands of tumor cells formed bodies resembling atretic follicles. On the basis of these two cases he made a histological analysis of the four others and came to the conclusion that they were fundamentally of the same nature. In one of them he found an unmistakable ovum in the center of the large mass of malignant tumor tissue. Besides ovarian elements—granulosa and lutein cells—cysts lined with columnar epithelium and containing mucus occurred in three cases. In two cases these cysts were quite distinct from the ovarian elements of the tumor. Bergstrand therefore considers these tumors to be a combined malformation of the germinal epithelium of the mesonephros and of Wolff's duct or Mueller's duct. From the clinical point of view it is of interest that these tumors, which macroscopically are shaped like ovaries, often show nodules and other signs of rapid growth, but are usually clinically benign if they are removed in time. However in one of the author's cases, that of a girl seventeen years old, death occurred from extensive metastases to the peritoneum five months after operation.

Microscopic examination gives no clue as to whether the active hormone is produced by the granulosa or by the lutein cells of the tumor. The investigations of Stenach and Kun, who in 1933 were able to demonstrate the virilizing effect of corpus luteum extract in guinea pigs, seem to indicate that this secretion is a function of the lutein cells.

When Meyer described these tumors, his explanation of their hormonal influence appeared logical and was generally accepted. However other investigators, among them Bergstrand, interpret the findings differently. Bergstrand emphasizes hirsutism as a characteristic of masculinization. Other evidences are changes in the tone of the voice, atrophy of the breasts, hypertrophy of the clitoris, amenorrhea, and loss of libido.

The differentiation between primary carcinoma and granulosa-cell tumor of the ovary or luteinoma from hypernephroma is still difficult. Secondary sex characteristics are due to hormonal influences, but the hormone or hormones have not been identified.

In every case the opinions of several investigators may be necessary for proper identification of the tumor.

A. F. LASE, M.D.

Kleine, H. O.: The Morphological and Functional Character of Granulosa-blastomata. Investigations of the Hormonal Action of Ovarian Blastomata (Die morphologische und funktionelle Eigenart der Granulosa-blastome. Untersuchungen ueber hormonale Wirkungen von Eierstockblastomen). *Arch. f. Gynaek.* 1933, dv. 163.

Twelve cases of granulosa-cell tumors with hyperplasia of the endometrium are reported briefly. One of the patients was a child three and one-half years old with enlarged breasts and slight enlargement of the uterus. Two were girls eighteen years of age and the others women up to sixty-one years of age. Hyperplasia was found also in two other cases in which the endometrium could be investigated. Seven of the tumors were cystic, five were solid, and all were unilateral. In two cases metastases were found. One was that of an eighteen-year-old girl with repeated recurrences after roentgen-ray treatment, but with final cure thirteen years after the operation and eight years after the last roentgen treatment. The other was that of a thirty-two-year-old woman who died from metastases eight years after the operation in spite of irradiation. Seven of the women lived from two to twenty-one years after the operation.

The pathological anatomy and histology are discussed. Kleine's cases represented nearly all of the known forms. The tumors were considered "dyontogenetic." In one case vacuole formation in the granulosa epithelium in an otherwise normal ovary of a sexually mature woman was found incidentally. However, it was impossible to determine whether it was a follicle or was lying in the medullary layer.

Most of the patients were of the pyknic type. The hypophysis of a sixty-one-year-old woman who died from bronchopneumonia two and one-half days after the operation was found to be fairly normal. Like Dieter, the author found the tubal mucosa in older women to be still the same as in women at the age of active sexual life. The tube of the small child was strikingly far advanced in development. Kleine compares his observations with similar observations reported in the literature.

The hormonal effects of the tumors are the subject of a special discussion. ROSEMARY MEXIA (G)

Szathmáry Z. von: Brenner Tumors in the Wall of the Larger Ovarian Cystomata (Ueber Brenner'sche Tumoren in der Wand grosserer Ovarialcysten). *Arch. f. Gynaek.* 1933, dv. 390.

Among 1224 ovarian tumors removed at the Gynecological Clinic of the University of Budapest in a period of fifteen years 5 Brenner tumors were found. Four of the latter appeared as nodules in the wall of pseudomucinous cystomata and 1 as a nodule in a simple serous cystoma. The detailed description of the tumors is supplemented by illus-

trations. Attention is called to the fact that the epithelium of the wall of the large pseudomucinous cyst was connected with the tube found in the solid part of the tumor.

In the literature there are 19 reports pertaining to the uterus. Atrophy was found in 7 cases and a myoma in 9. Among the author's cases there were 2 of atrophic uterus and 2 of myoma. In 4 cases the solid parts of the tumors were quite large, the size of 2 fists, and in 1 case the size of a nut. In 1 case the cyst wall was thicker than usual and in the collapsed condition the loculi appeared to have a multiple layered epithelial covering of fine plicae villosae resembling the endometrium.

Of the patients whose cases are reviewed by the author more than 50 per cent were past fifty years of age. The majority were between the ages of fifty and seventy years. Of 23 reports, 7 pertained to nulliparae and 16 to multiparae. The older women had no hemorrhages and of the younger women only a few had irregularity of bleeding. In the cases reviewed by the author there was no unusual bleeding. An endocrine function seems to be lacking. No hyperplasia of the endometrium could be found in any of the cases, and lipoids were not demonstrated in the tumors. Adhesions of the tumors and ascites are unknown. Histologically and clinically the tumors are benign. They are to be sharply differentiated from the granuloma-cell tumors. Genetically the cell foci of Walthard must be taken into consideration.

R. MEYER (G)

EXTERNAL GENITALIA

Cruikshank, R., and Sharran, A.: The Biology of the Vagina in the Human Subject. Parts I and II. *J. Obst. & Gynec. Brit Emp.*, 1934, 31, 190.

By histological examination the authors found that glycogen is present in the vaginal epithelium up to the third or fourth week of life and during the reproductive period, but not in the prepuberty or postmenopausal periods. The periods in which it is present correspond to the periods of activity or presence of the ovarian hormone in the circulation. It is well known that the hormone is present from puberty to the menopause. The authors were able to prove its presence at least in the urine during the first few weeks of life. As there was no demonstrable ovarian activity at that time, the hormone was considered to have come from the maternal circulation.

In other investigations it was discovered that the presence of Doederlein's bacillus and an acid vaginal secretion were coincident in time with the presence of glycogen in the vaginal epithelium. The authors believe that the production of the acid reaction is a defense mechanism against the establishment of harmful bacteria in the vagina. While this protective mechanism may be absent in the earlier months of pregnancy, it develops as pregnancy progresses, a fact supporting the view that oestrin is produced in increasing quantities as pregnancy advances.

HENRY S. ACKEN, JR., M.D.

Grabčenko I.: Carcinoma of the Vulva According to the Material of the Oncological Institute (Vulvakarcinom nach dem Material des Onkologischen Instituts). *Z. Akus.* 1933, LVV 33.

Of 1,422 women with tumors of the genital organs who were seen in the Oncological Institute, Leningrad in a period of five years, carcinoma of the vulva was found in only 61 (4.28 per cent). Its ratio to cancer of the uterus was 1:20.6. It occurred most frequently between the ages of fifty and eighty years, but 1 patient was twenty nine years and 4 patients were between thirty and forty years of age.

With regard to the etiology it is possible to speak only of a predisposing factor. Trauma (multiparity scars following tears) is apparently of no decisive importance, as carcinoma of the vulva was found in 13 nulliparae and 4 virgins. Probably of more importance in the causation of the condition is pruritus vulvae, since in 53 per cent of the cases reviewed the patient had suffered for from three to five years before the beginning of the carcinoma from irritation caused by the discharges due to chronic vaginitis and endocervicitis. In 5 (8.2 per cent) of the cases the vulvar carcinoma developed on the basis of a solitary condyloma, the sequela of chronic gonorrhea. An irritating discharge was present in 9.8 per cent of the cases and eczema in 1.6 per cent. In 27.87 per cent no causative factor could be discovered.

The most common site of origin of carcinoma of the vulva is probably the surface epithelium. In only 1 case did the author observe the development of cancer from Bartholin's gland. In 62.29 per cent of the cases reviewed the carcinoma was on the labium majus. In 3 of these cases there were contact metastases on the other labium.

The lesion was a squamous-cell carcinoma in 11 cases, a basal-cell carcinoma in 29 cases, a melanocarcinoma in 1 case, and a precancerous lesion in 1 case.

When the glands are palpable on both sides the glands on the other side are rarely free from involvement. In a case of carcinoma of the clitoris a metastasis was found in the right lung. In another case there was a massive oedema of the thigh so great that the middle third had a circumference of 80 cm.

In cases of multiple condylomata the differential diagnosis may present difficulties and require a histological examination.

The clinical cases are divided into 4 groups: (1) those of multiple tumors without metastasis; (2) those of movable tumors with movable inguinal glands; (3) those of fixed tumors with movable inguinal glands; and (4) those of fixed tumors with fixed glands. The last 2 groups are regarded as hopeless. Cases in these groups constituted 29.5 per cent of those reviewed.

The simplest and best treatment of carcinoma of the vulva today is surgical operation, but in close competition with this is electro-excision with the electrothermic apparatus. Although after the latter the wound heals by secondary intention it seldom heals by primary intention after sharp excision.

Electro-coagulation gives excellent hemostasis and closes the lymph vessels so that possible aspiration of the cancer cells is hindered. In the Oncological Institute it is regarded as an excellent method for carcinoma of the vulva. Irradiation had not been found to yield noteworthy results.

Whether the cellular tissue should also be removed in cases in which the glands are not palpable is still questionable. In the author's opinion its removal is not always necessary.

In 33 cases of carcinomatous adenopathy irradiation therapy yielded no cure; at most, it resulted in only a slight decrease in the size and some increase in the mobility of the glands. In eighteen cases the superficial and deep glands were removed by splitting Poupert's ligament transperitoneally along the course of the large vessel. In sixteen of these cases the wound healed by secondary intention. Considerable pressure with sand bags could not prevent the collection of lymph or hematoma formation. In 3 cases of carcinoma of the vulva complicated by erysipelas the latter did not prevent recurrence of the cancer, a fact which refutes the theory that treatment with erysipelas streptococci may be of value in cancer. In carcinoma of the vulva the method of treatment used is not the chief factor. Of most importance in diagnosis made while the carcinoma is still local. At that stage all methods are good. Irradiation therapy is less satisfactory than surgical operation. Active diathermic intervention is to be preferred to the use of the knife, especially when the cancer is regenerating. T. PARSONS (Z)

MISCELLANEOUS

WYNN, H. H. N. Some Observations on Stricture of the Female Urethra. *Am. J. Obst. & Gynec.* 1934 XXXIV, 373

The author reports his findings in thirty-six cases of urethral stricture in women.

The most common cause was gonorrheal urethritis, but in some cases the condition was due to injury of the urethra from childbirth. In nearly half of the cases the cause could not be determined.

In the majority of the cases repeated dilatation gave relief when it was carried out for a reasonable length of time. Obstruction to the passage of a sound that will pass the meatus without difficulty may be present without causing symptoms.

The pathological picture in the majority of clinical strictures is not known. It is probable that many of the symptoms are due to the accompanying prothitis rather than to the narrowing of the lumen.

In the discussion of this report DAWKINSON stated that he had found urethral stricture in the female a very unusual condition. The careless or reckless use of the cautery or diathermy current to destroy Skene's glands may be followed by a pronounced stricture. In the removal of carbuncles and the treatment of Skene's glands great care must be taken to prevent damage to the floor of the urethra.

EDWARD L. CORNELL, M.D.

SHIVERS, C. H. deT., and COONEY, C. J.: The Formation of Calculi in Urinary Diverticula of the Female. *Report of a Case. J. Am. M. Ass.* 1934 CXI, 997

The formation of calculi in a diverticulum of the female urethra is rare. In a review of the literature the authors were able to find the records of only two authentic cases. In the case they report the calculus apparently formed in a pre-existing urine pocket. The anatomical relation of the muscle tissue to the mucous and submucous coats suggested that the pouch was congenital. The authors believe that the illness began at the time of a trauma to the urethra during a difficult labor with forceps delivery which occurred several years previously.

The treatment indicated should include (1) preliminary suprapubic drainage to divert the urinary stream and (2) complete removal of the sac followed by repair of the urethral wall. In the authors' case this treatment yielded an excellent result.

ABRAHAM A. BRAUER, M.D.

ZONDEK, B.: Primary Polyhormonal Amenorrhoea with Hyperplastic Glandular Cystic Mucosa (Primäre polyhormonale Amenorrhoe mit glandulärer cystischer hyperplastischer Schleimhaut). *Acta obst. et gynec. Scand.* 1934 XXXI, 309

In earlier investigations Zondek found that amenorrhoea and haemorrhage may both be the result of the same functional process, namely, a too strong and protracted production of follicular hormone (follicular) or a qualitative and quantitative change in the production of luteohormone. These observations suggested to him the possibility of polyhormonal pathological pictures which might be diagnosed by quantitative analysis of the urine for hormones. In the chain of evidence there still remained a missing link. It was not yet proved that the mucosa of the uterus shows the same changes in amenorrhoea as in haemorrhage.

In this article Zondek reports a case of primary polyhormonal amenorrhoea in a twenty-year-old woman with persisting follicle, a highly increased secretion of folliculin (400 mouse units per liter) and glandular cystic hyperplastic uterine mucosa. In normal ovarian conditions the output of hormone is from 200 to 300 mouse units per liter. It is therefore apparent that the same anatomical changes can be found in amenorrhoea as in polyhormonal haemorrhage (metropathia haemorrhagica). This condition may be confused with extra-uterine pregnancy because of the amenorrhoea and the soft, cystic mass on one side of the uterus.

A. F. LAM, M.D.

VIGUER, H., and BERNIS, E.: Lesions Resulting from the Use of Intra-Uterine Contraceptive Pessaries (Lésions consécutives à l'emploi des pessaires intra-conceptionnels intra-utérins). *Gynec. et Obst.* 1934 VII, 444

While the sale of intra-uterine contraceptive pessaries is prohibited in France, the legal restric-

tions protect only the poor. Unscrupulous practitioners still prescribe them in large numbers to women of means. This report reviews the world literature on complications resulting from their use.

The authors describe the 3 most common types of contraceptive pessaries: (1) intra-uterine pessaries placed entirely within the uterine cavity and (2) mixed types with both an intra-uterine and a intravaginal application. The Pust and Graefenberg pessaries are of the first type. They consist of silkworm or silver filaments which are introduced into the uterine cavity after dilatation of the cervix and are left in place indefinitely. Pessaries of the second type, the so-called butterfly or wish bone variety consist of a disk intended to cover the external os and, supported by the disk, a stem to extend through the cervical canal. The intra-uterine portion consists of two arms extending out in a V-shape. The arms are very flexible so that they can be squeezed together easily and enclosed in a gelatine capsule to facilitate their introduction into the uterine cavity. When the capsule melts, the arms extend laterally to the uterine walls and retain the pessary in place.

Whatever type of pessary is used, its introduction is not easy and not devoid of danger. Pessaries of the intra-uterine type are usually retained indefinitely. Those of the mixed type are usually removed for cleansing at intervals of several months. The intra-uterine pessary acting as a

foreign body causes hyperplasia of the endometrium. Graefenberg considers this only a slight exaggeration of the normal, but others consider it definitely pathological. However Graefenberg cautions against the use of his pessary in cases of adnexal vaginal cervical, or endometrial infection.

A review of the world literature reveals numerous reports of fatalities or morbidity following the use of all types of intra-uterine pessaries. Rust reported 17 deaths in 385 cases of complications. Smaller series of cases reported by Jones, Glaser, Keller, Vaudechal, and Sussex confirm the view that harmful effects are not uncommon. The most frequent complications are perforation of the uterus and pelvic peritonitis.

The inefficiency of intra-uterine pessaries in preventing pregnancy is evidenced by reports of Keller, Konikow, Vaudechal, and Gummert. Of 78 cases of abortion occurring during their use which were reported by Gummert, puerperal infection occurred in 61 (81 per cent).

The authors conclude that the intra-uterine pessary should be discarded as a contraceptive agent on the following grounds: technical difficulties in its introduction and removal; irritation and infection of the mucous membranes; the spread of infection to the adnexa and peritoneum; the danger of perforation of the uterus and adjoining organs; and inefficiency in the prevention of conception.

HAROLD C. MACK, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Das, Sir K. Twin Pregnancy. *J Obst & Gynec Brit Emp* 1934, xli, 127

In 180,185,760 births reviewed by Das there were 2,091,226 twins. The ratio of the births of twins to the births of single infants was therefore 1:90. The data were taken from the official birth statistics of various countries and from hospital and family records in various towns. The ratio of twin births to single births is highest, 1:71 in Russia and Denmark, and lowest, 1:301 in Japan. In the white race it is 1:83 and in the colored race 1:67. Figures from Calcutta and Madras show a distinctly higher incidence of twin births in the dark races. Climate does not seem to have an influence on the frequency of twins. No definite conclusion regarding periodic variation is possible. HARRY W. FISK, M.D.

Schroderus, M. Four Surgically Treated Cases of Unruptured Interstitial Tubal Pregnancy; Intrauterine Tubal Abortion. Contributions on Early Diagnosis (Vier unrupturierte operierte Fälle von interstitieller Tuberschwangenschaft, Abortus tuberus interstitialis. Beiträge zur Frühdiagnose). *Acta obst et gynec Scand* 1934, xiv, 45

According to the statistics of recent years, cases of interstitial tubal pregnancy today constitute less than 1 per cent of all cases of tubal pregnancy. In interstitial tubal pregnancy as in tubal pregnancy of other types, it is possible and advisable to differentiate between tubal rupture and tubal abortion.

Since 1925 109 cases of interstitial tubal pregnancy have been reported in the literature. To these, the author adds 3 cases observed by himself and a case treated in the Obstetrical and Gynecological Clinic at Helsinki. All of these were cases of interstitial tubal abortion. In two of the author's cases the abortion was relatively recent, in the third it was somewhat older and in the case treated at the Helsinki Clinic it was still older.

Two of the author's cases were seen in the same year. In the first one operation was performed after a diagnosis of myoma. In the other, the correct diagnosis was made before operation. In the third case the diagnosis was very uncertain. In the case seen at the Helsinki Clinic the condition was believed to be a myoma even at operation.

The author describes the clinical picture of the initial stage of an interstitial tubal abortion and emphasizes that it is relatively constant and characteristic. Early diagnosis, which is very important in interstitial tubal abortion, is not so difficult as is generally assumed. More difficult is the differentiation between threatening abortion of an intra-uterine cornual pregnancy and a myoma complicated by inflammation.

On the other hand, cases in which rupture has already occurred are almost impossible to differentiate from cases of true tubal rupture as the acute symptoms mask the earlier clinical picture. It is apparent that in these cases also inflammatory factors are of chief importance in the etiology.

Macomber, D.: The Effect of Changes in the Amount of Protein upon Pregnancy and Lactation. *Am J Obst & Gynec* 1934, xxiv, 433

In experiments on rats, Macomber found that fertility was greatest when the diet had a 30 per cent content of protein and 2.0 gm. of protein were ingested daily. Progressive reductions in the daily intake of protein to a minimum of 0.83 gm. reduced fertility but did not materially affect pregnancy. However the failure of reductions in the protein intake to affect pregnancy in the rat should not be interpreted as indicating that they would not affect pregnancy in larger mammals whose young are born at a later stage of development.

The effect on lactation was very definite. As the daily amount of protein ingested fell from 4.84 gm. to a minimum of 0.86 gm. a smaller percentage of young was raised to weaning, the average weight of the young when they were weaned was less, and the weight lost by the mothers during lactation was greater. Finally the metabolism during lactation fell below zero.

The author suggests that there is an optimum requirement of protein, probably somewhere between 100 and 125 gm. per day for human pregnancy and lactation. This requirement is undoubtedly greater for lactation than for pregnancy, but with the greater development undergone by the human fetus before birth there is a correspondingly greater requirement for protein. It is suggested also that perhaps one of the reasons why certain women do not stand pregnancy and lactation well is that their diet is deficient in protein.

EDWARD L. CUNNING, M.D.

Scott, W. A., and Henderson, D. N.: Pregnancy and Rheumatic Heart Disease. *Am J Obst & Gynec* 1934, xxiv, 342

Rheumatic heart disease is the most common type of heart disease encountered in pregnancy. Pregnancy is frequently the exciting cause of myocardial failure.

Advice given to the patient with rheumatic heart disease as to the risk of a contemplated pregnancy or the management of an existing pregnancy must be determined with careful consideration of her economic circumstances.

The management of a pregnant woman with rheumatic heart disease requires the co-operation

of a cardiologist and an obstetrician. It is at least questionable whether the average age of death in cases of rheumatic heart disease is lowered by pregnancy if the economic position of the patient is considered. There is a general tendency to be too radical in the method of delivering women with rheumatic heart disease.

At the Toronto General Hospital there were 48 deaths in 580 consecutive deliveries, a mortality of 0.43 per cent. In 130 deliveries in cases of rheumatic heart disease there were 12 deaths, a mortality of 8.45 per cent, but in the last 41 cases there was only 1 death, a mortality of 2.33 per cent.

In the discussion of this report, ROYCE said that he had found a long bearing-down second stage rather hazardous in cases of rheumatic heart disease.

ROMG stated that he had found twilight sleep helpful in the first stage and that in all cases labor should be terminated artificially as soon as the first stage is over.

EDWARD L. CORNELL, M.D.

Midjuginskij A. Perforation of the Uterus in Artificial Abortion (Ueber Uterusperforation bei kuenstlichen Aborten) Ginek 1933 1/II 33

According to the statistics of the Ukrainian Gynecological Congress in 1927 perforation occurred at that time in 0.23 per cent of all artificial abortions. Since then, more comprehensive statistics have been published. According to the collected statistics of some of the Moscow gynecological clinics in 1929, perforation occurred in 45 of 61,000 artificial abortions or once in every 1,330 artificial abortions. There were no deaths. In the Third Moscow Gynecological Clinic during the same period of time perforation occurred in 9 (0.04 per cent) of 21,500 artificial abortions or once in every 2,400 artificial abortions. From the legalization of artificial abortion up to 1930 135,000 artificial abortions were done in 12 Moscow gynecological clinics. Perforation was known to have occurred in 76 cases and was suspected in 20 cases. It therefore occurred once in every 1,510 abortions or 0.07 per cent of the total number. Of 86,000 artificial abortions reported from the Moscow gynecological clinics in 1931 perforation occurred in 31 (0.04 per cent) or in 1 of every 2,788. There were no deaths. Since the legalization of abortion 231,000 artificial abortions have been done. Perforation occurred in 127 (0.058 per cent) or in 1 of every 1,740.

In 1930 in 14 hospitals of 18 large cities near Moscow there were 55,372 artificial abortions with perforation in 68 (0.1 per cent) or perforation in 1 of every 814. In 50 small district hospitals there were 22,849 artificial abortions with perforation in 0.15 per cent or 1 perforation in every 617 abortions. Specialists performed 79,719 artificial abortions with perforation in 32 (0.1 per cent) and non specialists 6,408 abortions with perforation in 24 (0.4 per cent).

According to the combined figures for Moscow and the provinces, a total of 312,000 artificial abortions were performed with perforation in 251 (0.08 per cent) or perforation in 1 of every 1,243.

In order correctly to determine the importance of uterine perforation as an obstetrical complication, its incidence calculated from statistics was compared with the incidence of a similar complication occurring at the end of pregnancy namely, uterine rupture. According to Ilirsonoff the incidence of uterine rupture in 8,000 deliveries in Leningrad was 0.05 per cent. Of 18,000 deliveries reviewed by Iwanoff uterine rupture occurred 0.1 per cent. For the entire Soviet Union Michailoff calculated the incidence of uterine rupture as 0.15 per cent. Cholotkowski as 0.05 per cent and Kusmin as 0.05 per cent. When the statistics for western Europe are included the average incidence of uterine rupture is between 0.04 and 0.05 per cent. When these figures are compared with the incidence of perforation of the uterus in artificial abortion in Moscow in 1931 0.04 per cent, it is evident that the incidence of rupture and perforation of the uterus is about the same.

Of 76 perforations 91 per cent occurred in the corpus and 9 per cent in the cervix. Of 69 perforations of the corpus, the perforation occurred into the abdominal cavity in 40 and into the broad ligament in 29. In 13 hematomata formation occurred. Forty seven per cent of the perforations were produced by a curette and 29 per cent by a Hegar sound. In 9 (12 per cent) abdominal contents were withdrawn. In 5 this was done with the curette, in 3 with the abortion forceps, and in 1 with the dressing forceps. The frequency of withdrawal of abdominal contents by the curette was due to the technical error of turning the curette around in the uterus 180 degrees, a manipulation which is quite unnecessary.

The treatment of perforation is of great importance. A perforation occurring under aseptic conditions in a clinic is quite different from a perforation occurring in criminal abortion. Of 76 perforations reviewed, 40 were treated conservatively. Of 36 cases in which laparotomy was done, suture of the wound with catgut after freshening of its edges was found sufficient. In 10 cases excision of the wound was necessary. In 5 cases removal of the uterus was done. Of the conservatively treated cases a high fever persisted for some time in only 6. There were no deaths under either type of treatment. Fifty-six of the women were completely restored to health. Of 68 cases of perforation outside of Moscow 28 were treated surgically and 40 conservatively. There were no deaths.

Although conservative treatment may be permissible in some cases, it is not to be recommended as it is associated with uncertainty. The procedure of choice is surgical. In 50 laparotomies it was found very frequently that an optimistic assumption that the perforation injury was slight was not justified. Frequently severe hemorrhages, injuries of the mesenteric vessels, and extensive serosal defects are not evident until the abdomen is opened. Moreover it is impossible to foretell whether infection through the uncaired for perforation opening will find a route into the abdominal cavity and there are records of cases in which the perforation

Children born to women with a flat pelvis were of about average size, but those born to women with a generally contracted or rachitic pelvis weighed several ounces below normal. The infant mortality varied directly with the size of the child.

The wisdom of allowing a test of labor to progress more than twenty four hours when uterine contractions are adequate is dubious unless all signs point to speedy and spontaneous termination of the labor. Low cervical cesarean section is the procedure of choice for the child although it is probably associated with added risk to the mother.

EDWARD L. CORNWELL, M.D.

Cannell, D. E. and Dodek, S. M.: Primary Breech Presentations. *Am J Obst & Gynec* 1934, VIII, 317.

The authors report on the results of breech delivery in 550 (3.4 per cent) of 16,166 obstetrical cases. Four hundred infants were delivered at term with a gross mortality of 8.5 per cent and a corrected mortality of 6.75 per cent.

The chief difficulty encountered was the undilated cervix. Manual dilatation of the cervix did not prove satisfactory. 34.5 per cent of the deaths of infants delivered at full term occurring when this procedure was adopted.

Breech labor of elderly primiparae is responsible for the high mortality of infants born at term. More frequent adoption of cesarean section in these cases is indicated when disproportion is present or labor is unduly prolonged.

Breech labor and delivery are considerably more dangerous in primiparae than in multiparae.

Preservation of the membranes has little effect on the duration of labor but greatly decreases the dangers of delivery. Episiotomy is indicated in all cases of full-term breech presentations in primiparae.

Gentleness, deliberation, and careful manipulation are essential in breech extraction. Breech extraction under deep anesthesia and with full dilatation is a satisfactory method of delivery in cases of breech presentation.

The more frequent adoption of external cephalic version is recommended to lower the fetal mortality in breech presentations. EDWARD L. CORNWELL, M.D.

Hoffstrom, K. A.: A Series of 100 Cesarean Sections (Lina Serie om 100 Kaisersnitt). *Acta obst et gynec Scand* 1934, XIV.

In the period from 1906 to 1933, cesarean section was performed in 100 (0.5 per cent) of 20,892 deliveries at the Lying In Hospital in Tampere, Finland. During the last three years it was performed in 1.8 per cent.

In discussing the technique of the operation the author emphasizes that the lips of the uterine wound should not be closed with artery clips or forceps, injury to the serosa of the uterus should be avoided, and the peritoneal suture should be done tangentially.

Of the cases reviewed, a corporeal incision was made in 36, a cervicocorporeal incision in 36, and a

purely cervical incision in 8. In infected cases the incision was made either cervically (retrovesically) or after lifting of the uterus from the abdominal cavity cervicocorporeally.

In 73 per cent of the cases there were no complications. The puerperal morbidity was 27 per cent. In 24 cases there were slight disturbances and in 2 cases more severe disturbances in the puerperium. There were 5 deaths, but as none of them had any relation to the operation, there was no operative mortality. The corrected infant mortality was 1 per cent.

The 3 chief indications for the operation were: (1) a disproportion between the infant's head and the maternal pelvis such that it appeared that the use of high forceps would be of no avail or contra-indicated, (2) severe hemorrhage from placenta previa in cases in which the cervical canal was still undilated, and (3) the forms of eclampsia and eclampsia in which purely expectant treatment by the Stroganoff-Zweifel procedure or a conservative active treatment was unsuccessful or the eclampsia was so severe that these methods were contraindicated.

Great importance is attached by the author to the absence of infection, the site of the incision in the uterus, and the prognosis. The decision as to the presence or absence of infection was based on the presence or absence of manifest clinical symptoms of infection and whether or not the patient had been subjected to a vaginal examination before she entered the clinic.

The postoperative adhesions were studied in 24 cases, chiefly those in which cesarean section was done for the second time (in 1 case for the third time) at the Lying In Hospital. In 7 of these cases there were no adhesions, in 5 cases slight adhesions, and in 2 cases severe adhesions. The author concludes that the formation of adhesions is to be attributed, not to infection in the course of a previous cesarean section, but to disturbances of the healing of the wound in the uterine wall or the presence of other peritoneal lesions. The latter seem especially liable to favor the formation of adhesions in the corporeal incision.

Seventeen of the patients became pregnant again comparatively soon after the operation. Six were delivered spontaneously at term of large children, a fact showing the resisting ability of the scar.

In conclusion the author says that the extension of the indications for cesarean section during the last decade has saved life in a large number of otherwise hopeless cases of placenta previa and eclampsia. Therefore, without greatly endangering the mother's life, it is now possible much more frequently than formerly to save the life of the infant.

Brattström, E.: Results of Extraperitoneal Cesarean Section (Quelques résultats de la césarienne extrapéritoneale). *Acta obst et gynec Scand* 1934, XIV, 37.

The author reviews seventeen cases in which extra-peritoneal cesarean section was performed by Litz

ko's method. All of the infants survived. One tuberculous mother died a month after the operation. Autopsy disclosed peritonitis. Small lesions of the bladder or peritoneum occurred in four cases. In no case was there a fistula remaining at the time of the patient's discharge from the hospital. The operative technique is described briefly. The Litzko method is recommended particularly for cases of suspected infection in which intraperitoneal cesarean section is contra indicated or it appears that a vaginal intervention would be too difficult.

Mollnengo, L.: Rupture During the Course of Labor of a Uterus Previously Subjected to Cesarean Section for Vesicular Mole (Rottura in travaglio di parto di utero precedentemente cesariato per mola vescicolare). *Clin ostet* 1934, xxvii, 88.

The case reported was that of a woman twenty four years old who had been subjected to cesarean section two years previously for vesicular mole. During the first part of the labor in which the uterus was ruptured the pains were strong and effective. Later progress became so slow that delivery was effected by low forceps. A living child was born. Following the delivery there was little bleeding. Through the abdominal wall the author palpated a sinus in the anterior wall of the uterus. Massage of the uterus caused no contraction. On vaginal examination, the examining finger slipped through a tear in the uterus into the general peritoneal cavity. The patient showed no signs of shock or acute anemia, and there was no severe pain or severe external hemorrhage.

Immediate removal of the uterus by laparotomy was followed by good recovery. Examination of the resected uterus showed that the rupture had occurred through the scar of the cesarean section. The author attributes the defective scar to the rapid involution of the uterus following the molar pregnancy.

PETER A. ROSE, M.D.

PURPERIUM AND ITS COMPLICATIONS

Hare R.: The Haemolytic Streptococci from the Vagina of Febrile and Afebrile Parturient Women. *J. Path. & Bacteriol.* 1934, xxxvii, 129.

The investigation reported by the author included the following procedures:

1. Haemolytic streptococci from febrile and afebrile cases were incubated on a mixing machine in normal defibrinated human blood, and by means of explants into agar at intervals an increase or decrease in the number of surviving cocci was determined.

2. Haemolytic streptococci from afebrile cases were incubated in the blood of the patients as well as in that of normal persons to detect a possible increase in immunity.

3. The virulence for mice of strains from afebrile patients and the possibility that it might be increased by passage were investigated.

As a result of this study the author drew the following conclusions:

1. Strains of haemolytic streptococci from afebrile parturient women are killed easily by normal human blood.

2. Strains from severe invasive infections are able to multiply.

3. Strains from localized infections show less tendency to multiply than those from invasive infections, but cannot be killed so easily as those from afebrile cases.

4. The blood of afebrile cases with haemolytic streptococci in the cervical secretion behaves toward these organisms in much the same way as normal blood.

5. The virulence for mice of strains from afebrile cases can be increased by animal passage.

CARL H. DAVIS, M.D.

Fruhnscholz, A. Postpartum Tuberculous Meningitis (Meningitis tuberculosa du post-partum). *Gynäk. u. obst.* 1934, cxix, 103.

Tuberculous meningitis may develop at any stage of pregnancy. The author observed a case in which it occurred at the onset of gestation with symptoms suggesting hyperemesis gravidarum. Couvelaire and Lacomme have described the clinical picture of tuberculous meningitis during the last third of pregnancy and have emphasized its diagnostic difficulties and the problems involved in the prognosis for the life and health of the fetus. The author describes this condition as it is manifested during the puerperium and discusses the problem of the causal relationship of delivery.

The unfavorable effect of pregnancy and delivery upon all forms of tuberculosis is well known. Mechanical as well as biological factors lower the resistance of the organism, re-activate latent foci and disseminate the bacilli through the ruptured uterine sinuses into the general circulation after placental separation. The author reports a case of tuberculous meningitis in a multipara with an isolated pulmonary lesion who succumbed on the sixteenth day after normal delivery. At autopsy a retained placental cotyledon was discovered in the right uterine cornu. In another case, also that of a multipara, death occurred on the twenty-eighth day after curettage for septic abortion. In a third case death resulted five weeks after premature delivery. The placenta was fibrinous and had a lardaceous appearance. Although autopsy was not performed, the author is of the opinion that in this case there was a tuberculous endometritis with secondary placental involvement resulting in premature delivery. A fourth case, which terminated fatally seven weeks after delivery, was similar. The author draws the following conclusions:

1. The puerperium following delivery or abortion favors and provokes the dissemination of tubercle bacilli, particularly to the meninges.

2. In some cases the disease has its onset during pregnancy brings about early termination of the

pregnancy and continues its course during the puerperium. In other cases it appears to have its onset during the puerperium, sometimes beginning as late as six weeks after normal delivery.

3. Delivery or abortion may act directly (mechanically) in disseminating the infection by causing tissue damage which exposes localized foci to the blood stream, or by causing sudden vasomotor effects. Biological factors (lowered resistance to disease) may also aid in the propagation of the infection during this period.

4. Tuberculous meningitis usually develops from three to six weeks, rarely from two to three weeks, after delivery.

5. Late tuberculous meningitis is generally related to delivery or abortion through an intermediary pathological state which establishes the transition between parturition and septicemia.

6. This intermediary state is usually manifested clinically by the characteristic signs of a mild puerperal infection and progresses from the subfebrile state without clinical significance to the stage of frank meningitis.

7. The tuberculous focus may be pulmonary, pleural, or genital. Anomalies of the placenta noted in two of the four reported cases suggested the pre-existence of endometrial anomalies due to tuberculous infection.

HAROLD C. BLACK, M.D.

NEWBORN

Henriet, P. Necrosis of the Cellulo-Adipose Tissue of the Newborn from Obstetrical Trauma (La nécrose du tissu cellulo-adipeux du nouveau-né par traumatisme obstétrical). *Rev. franç. d'obst. et gynec.* 1934, XLV, 154.

Necrosis of the subcutaneous adipose tissue of the newborn resulting from birth trauma is rare and often unrecognized. A study of this condition opens the way for interesting investigations of the chemical constitution of fats and the histological reactions of the subcutaneous cellular and adipose tissue of the newborn.

Two clinical forms of necrosis of the cellulo-adipose tissue of the newborn have been described. The more frequent type is discrete and limited to a single tissue, while a less common type is more extensive and involves several tissues. The discrete form usually occurs on the malar region of the face at the points of pressure applied by the obstetrical forceps. It makes its appearance usually as a small nodule or plaque on the fourth or fifth day, disappears in from two to eight weeks, and is entirely asymptomatic. The diffuse form appears as multiple nodules or plaques corresponding to areas subjected to trauma during delivery or resuscitation (face, shoulders, thorax, buttocks). These nodules may vary in size and appearance, the areas of induration being rounded in the nodular type and irregular in the plaque form. The overlying skin is purplish, red, discolored or violaceous and gradually fades. The cutaneous surface is smooth, cannot be wrinkled, does

not pit on pressure, and is insensitive. These areas increase in size for several days and then regress slowly to disappear after several weeks. An atypical variety of the affection is followed by liquefaction. The author reports a case of this type. Aspiration of the fluid shows degenerating adipose tissue and cellular debris. The liquid is sterile on culture, but may be infected secondarily if the overlying skin is abraded. The prognosis for cure through spontaneous resorption is excellent. The diagnosis is simple if the condition is borne in mind. It has been confused with ecchymosis, scleroderma, sclerema nodular erythema erympelas, and gumma. Histological examinations reveal no changes in the skin (dermis, epidermis) and no vascular lesions. The adipose tissue shows marked necrosis with invasion of histiocytes. Fatty acid crystals are numerous. Microscopic cysts surrounded by histiocytes are numerous. The highly vascularized connective tissue is hypertrophic and edematous and invades the lobules of fat.

Fat necrosis occurs most often in regions rich in subcutaneous fat. Attempts to explain its frequency in the skin of the newborn are unsatisfactory. The author believes that there is a parallelism between fat necrosis in the newborn and steatosis in the adult, and that further studies of the adult type will clarify the condition seen in the newborn. The initial lesion consists of fat destruction through saponification giving rise to a foreign body reaction within the tissues. This is followed by fat regeneration after resorption of the fluid. The manner in which trauma results in saponification is not understood, but has been attributed to the liberation of a lipase, ischemia, local chilling and fetal cholesteraemia. Infection is definitely not the causative agent.

No treatment is necessary in most instances. The skin should be protected against infection. If extensive liquefaction occurs, the fluid may be evacuated under precautions for asepsis.

HAROLD C. BLACK, M.D.

MISCELLANEOUS

Leclerc, G.: Transmission of Cancer from Mother to Fetus (La transmission du cancer de la mère au fœtus exist-elle?). *Gynec. et obst.* 1934, LVII, 1.

A woman nineteen years of age became pregnant while suffering from a tumor of the maxillary sinus. Biopsy and histological examination showed the tumor to be a round-cell sarcoma. The neoplasm was removed and radium applied. Vaginal and uterine generalization developed and necroticated carcinoma section. The child succumbed a few minutes after extraction. The mother also died. Autopsy on the child revealed no trace of malignancy. The placenta was free from signs of neoplasm.

Integrity of the fetus of a woman in a state of cancerous septicemia whose uterus was infiltrated with neoplastic nodules seems surprising. It is to be expected that the fetus would be increasingly endan-

gered in the following three conditions (1) primary cancer of the uterus, (2) cancer in any location with multiple metastases and (3) metastatic involvement of the pregnant uterus.

Cancer of the uterine cervix during pregnancy does not endanger the fetus. Although cancerous septicæmia presents a distinct menace to the fetus transmission of the cancer to the fetus usually does not occur. However, there are exceptions to this rule. In a case reported by Lebert in 1851 a nodule was found at autopsy in the peritoneum of a four months fetus extracted from a mother dying of general cancerous infection. As the nodule was lost its histological examination was impossible.

In 1931 Sabrazès referred to a case reported by Parkers—that of a woman twenty seven years of age who eighteen months previously had been operated upon for sarcoma of the thigh. In April 1929 after the occurrence of visceral and subcutaneous metastases, this woman was delivered by cesarean section at term. The child was apparently normal but the placenta was infiltrated with melanoid tumor nodules. In July the mother died of metastases. The child developed satisfactorily to the age of eight months. It was then admitted to the hospital with enlargement of the liver and spleen and

slight fever. It died in January, 1930. Autopsy revealed numerous cutaneous subcutaneous and visceral nodules with the typical histological structure of malignant melanoma. The liver was apparently the first organ attacked, the neoplastic elements having passed from the placenta by way of the umbilical vein into the hepatic capillaries.

Another case of transmission of cancer from mother to fetus was reported by Holland. In this case also the cancer was of the melanoid type. It was located in the skin of a woman twenty years of age. Excision was followed by recurrence two months later. Two months after a second operation the woman became pregnant. When she was examined two weeks before term the cancer had become generalized. The fetus was living but the inferior segment of the uterus was occupied by a soft diffuse mass which hindered engagement of the head. Cesarean section was performed. Numerous metastatic nodules were found in the peritoneum and the placenta. The child appeared normal. The mother died two months later. At the age of eight months the child showed numerous melanoid nodules of the skin and hypertrophy of the liver. It died at the age of ten months. Autopsy revealed generalized metastases.

EDITH SCHANCHIE MOORE.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY AND URETER

DeCoursey J L, DeCoursey C., and Thues, O : Subtotal Bilateral Suprarenalectomy for Hyper-suprarenalism (Essential Hypertension) *J Am M Ass* 934, Oct. 1: 18

The authors believe that there is a definite relation between so-called essential hypertension and hyper-suprarenalism. They have performed bilateral subtotal suprarenalectomy in six cases of hypertension. In two, which are reported in detail, both the systolic and the diastolic blood pressure fell from 30 to 80 mm Hg.

The operation consists in removal of about two-thirds of each suprarenal. It is done in two stages.

The authors state that an analogy exists between overactivity of the suprarenals due to hyper-suprarenalism and overactivity of the thyroid due to hyperthyroidism, and that in conditions of essential hypertension it is always possible to demonstrate hyperplasia of the suprarenal medulla.

FRANK M. COCHRAN, M D

Mombwaerts, J : A Graphic Method of Functional Exploration of the Kidneys by Means of Dyes: Chromo-Urinography (Un procédé graphique d'exploration fonctionnelle des reins par les colorants la chromo-urino-graphique) *J d'anal med et chir* 934, xxvii, 17

The author has elaborated a new technique which consists in giving an intravenous injection of indigocarmine and then immediately collecting urine from each kidney on blotting paper placed on a horizontal revolving cylinder. The tinted urine leaves a mark on the blotting paper.

The apparatus is portable and consists of a cylinder activated by clockwork. The cylinder turns on a horizontal axis and can be regulated to any desired speed. A sheet of very absorbent blotting paper is rolled around the cylinder. There are two carriages supplied with rubber tubes, and to each rubber tube a ureteral catheter is attached. When the urine flows onto the blotting paper it leaves a colored line. The carriages are moved laterally when one complete turn of the cylinder is made.

Most of the curves have been made with the cylinder revolving at the rate of one turn in eight minutes. As the paper had a circumference of 48 cm. one minute was equal to 6 cm. and 1 mm. was equal to one second.

In making the test, a catheter is placed in each ureter, the bladder emptied, and the cystoscope removed. For about ten minutes samples of urine are collected for bacteriological and chemical examination. The catheters are then attached to the rubber tubes of the carriages. The intravenous injection

of the dye is made rapidly: a cgm. of indigocarmine in 10 ccm. of water being given. The cylinder is started in motion as soon as the injection is finished. The urine flows drop by drop, and streaks with a blue tint are soon seen.

The tracings show the exact time at which the dye appears in the urine and also the time it disappears. The amount of dye being eliminated can be determined by comparison with standards. The rhythm and size of the ejaculations, the amount of diuresis, and the effect of various drugs can be determined. Phenolsulphonphthalein may be used instead of indigocarmine and its excretion registered on blotting paper impregnated with an alkali.

When the kidney is normal, the dye appears between one and eight minutes. These are the extreme points. The line of appearance depends on the amount of diuresis. The color appears later in cases in which the urine is scanty than when diuresis is profuse.

In normal cases the color appears early and reaches its maximum in a short time. It then disappears rapidly at first and more slowly later.

When the kidney is deficient, the curve is retarded, the dye appears late, the maximum is delayed, and the disappearance is slow and imperceptible.

In reading the tracings, all the elements of the curve must be considered and a comparison made between the two kidneys. In general, the color appears earlier on the normal side, but in some cases it appears at the same time in both tracings when one kidney is deficient or appears first on the affected side. The author believes that more attention should be paid to the intensity of the color than to the time of its appearance provided it appears within the normal time limit. When all the elements of the tracings are retarded, extrarenal factors or bilateral renal lesions should be considered.

It is difficult to determine the exact time that the color disappears totally. As a rule it cannot be seen at the end of an hour.

Chromo-urinography has the advantage over chromocystography in that it is objective and exact. The author believes that it will be of great value in surgery of the urinary tract and in the study of the physiology of the kidney.

AARON S. SCHWARTZMAN, M D

Dambrin, L : The Comparative Anatomy of the Nerves of the Kidney (Anatomie comparée des nerfs du rein) *Arch d'anal d. anat et d. org et génito-urinaires*, 1933, II, 365

The technique used in his studies by Dambrin was that of Laugel-Lavastine of the Museum of Natural

History, Paris. Many of the lower forms were dissected, but most of the studies were made on material from frogs and dogs.

In the amphioxus there is no sympathetic nervous system and the urinary organs are not distinct. The sympathetic nervous system begins to make its appearance in the fish. In the amphibia, the sympathetic nervous system extends throughout the length of the body. In the frog the renal nervous system is analogous to that of man. In reptiles and birds, the renal plexus shows the morphological characteristics of the renal plexus in man. In mammalian animals the anatomical arrangement is the same as in man except that the renal plexus has fewer branches.

Many of the problems connected with renal innervation are explained by the fetal development of the kidney.

As the author has undertaken no histological research his discussions of microscopic anatomy are based on the findings of others. He cites especially those of d'Evant.

The larger number of the renal nerves penetrate the interior of the organ at the hilus, but the kidney also receives fibers which penetrate the external surface, thus forming an anastomosis with the capsular plexus. The glomeruli of the urinary tubules, the calyces, and the renal pelvis are all richly supplied with nerve fibrils.

MARSH W. POOL, M.D.

Bibli. A.: A Contribution to the Pathological Anatomy and Surgical Treatment of So-Called Essential Hematuric Nephralgia (Contributo alla anatomia patologica ed alla terapia chirurgica della nefralgia essenziale cosiddetta essenziale). *Ann. Ital. di chir.* 1933, xii, 1493.

The symptoms of idiopathic nephralgia are so like those of other renal conditions that a differentiation on this basis alone is usually impossible. The etiology and pathological anatomy of idiopathic nephralgia are still obscure. Some urologists believe that the condition may represent an early stage of nephritis in which only a few scattered glomeruli are involved.

Bull reports two cases in detail including the histological findings in the removed kidney. He concludes that in these cases the cause of the symptoms was an adhesive pachycapsulitis. He states that examination of serial sections of the kidney removed at operation is the only method which will reveal very small anatomical lesions in the capsule or parenchyma. In the absence of demonstrable lesions the condition must be presumed to be functional yet functional imbalance may be determined by an extremely minute lesion missed in the examination of the tissue.

The completely undetermined nature of the condition has led to great differences of opinion regarding the treatment. Bull believes that the treatment is necessarily surgical. The procedures which may be employed include decapsulation of the kidney, interruption of the sensory nerve pathways and nephrectomy. Decapsulation, the most conservative pro-

cedure, is favored by many surgeons. Its disadvantage lies in the possibility of recurrence of the symptoms with the formation of a new capsule. Various methods of denervating the kidney have been described but all aim to abolish the pain which is the most annoying symptom. Nephrectomy is indicated when conservative methods fail.

A. LOUIS ROST, M.D.

Kirkpatrick, H. J. R. An Investigation into the Permeability of the Kidney to Bacteria in the Circulating Blood. *Brit. J. Urol.* 1934, vi, 1.

In a review of the literature Kirkpatrick found differences of opinion as to whether bacteria are excreted through the intact kidney. In an experimental investigation of this problem he injected suspensions of various bacteria into the veins of rabbits, collecting the urine aseptically through a rubber catheter both before and after the injections. The bacteria used were the bacillus coli, the pneumococcus, the streptococcus hemolyticus, the bacillus tuberculosis and the staphylococcus aureus. The experiments were carried out on a large number of rabbits and were carefully controlled. Blood cultures were made at varying periods following the injections to determine the rapidity with which the organisms disappeared from the blood stream.

In the experiments with tubercle bacilli, inoculation of guinea pigs with the urinary sediment was negative. In those with other bacteria the organisms were recovered in varying quantities from the urine when large numbers were used and fluids were pushed.

Because of the tremendous number of bacteria and the high grade of bacteremia necessary for positive findings in the urine Kirkpatrick concludes that permeation of the normal kidney is not a mechanism in the production of bacteriuria under ordinary conditions.

LIVING J. SHARPE, M.D.

Kimball, F. N. and Ferris, H. W.: Papillomatous Tumor of the Renal Pelvis Associated with Similar Tumors of the Ureter and Bladder. A Review of the Literature and Report of Two Cases. *J. Urol.*, 1934, xxii, 357.

Papillary tumors, benign or malignant, involve the pelvis of the kidney much less often than the parenchyma. Not infrequently they are associated with papillary neoplasms in the ureter and bladder. The authors report two cases of papilloma of the renal pelvis. In one, the tumor was carcinomatous and in the other apparently benign but with implantations along the ureter. In the former nephrectomy, and in the latter nephro-ureterectomy was done. In both cases the operation was followed by bladder tumors. In the first case these were treated by bladder resection with ureterectomy and the implantation of radon seeds was done, and in the second case only by the cystoscopic implantation of radon seeds. In the former there was no evidence of recurrence in several months. In the latter, death eventually resulted from metastases.

Papillary tumors of the renal pelvis cause profuse hematuria. Pyelographic evidence is of great importance in the diagnosis. Of the cases reported in the literature recurrences developed in 64 per cent, and of those in which the original tumor was benign, the recurrences were malignant in 23 per cent. Because of the high frequency of recurrences, the treatment of choice is early complete nephroureterectomy including the intramural portion of the ureter.

ANDREW McNALLY, M.D.

Davis, R. L. Diverticulum of the Ureter. *J. Urol.* 934, XXV, 473.

The first records of diverticulum of the ureter appeared in the literature in 1921, when two cases were reported by Neff and Hale. The diverticulum usually occurs in the lower portion of the ureter. The best treatment is resection and implantation of the ureter into the bladder.

In the case reported by the author a stone was removed from the lower part of the right ureter by ureterotomy. About five months later the patient returned with chills, a high fever, pain in the right kidney, and pyuria. Examination revealed urinary stasis and colon-bacillus infection of the right kidney, and pyelo-ureterography disclosed a large saccululation external to the right ureter, extending from the lower pole of the kidney to a point below the ilium. The thin-walled diverticular sac was drained

about 500 c.c. of foul smelling turbid urine being evacuated, and a week later ureteronephrectomy was done.

This was a case of acquired ureteral diverticulum secondary to ureteral structure and stone formation.

MAURICE MELTZER, M.D.

Bergendal, S.: On the Clinical Study of Malignant Tumors of the Ureter. *Acta chirurg. Scand.* 1934 LVIII, 170.

After reviewing the very few records of sarcoma of the ureter in the literature, the author reports a sarcoma of the left ureter in a man twenty-eight years of age. Previously healthy, this patient had had constant hematuria for a month, and on admission to the hospital was extremely anemic. The first cystoscopic examination showed blood-tinged fluid trickling continually from the left ureteral ostium and rhythmic ureteral contractions which flung out powerful red spurts. The second examination showed blood tinged jets occurring at intervals, each jet broken by very short pauses. On catheterization the catheter passed the tumor without the slightest difficulty. At both examinations distinctly blood colored fluid was obtained also from the renal pelvis. Retrograde and excretion pyelography revealed dilatation of the renal pelvis and dilatation of the ureter down to the pelvic inlet. The lowest part of the ureter was of normal caliber. A portion of the ureter from three to four fingerbreadths in length between the dilated and the narrow part could not be filled. Evidently this was the site of the pathological change responsible for the bleeding and the cystoscopic findings. The diagnosis was tumor of the ureter or tumor of the renal pelvis with ureteral implantation.

Nephroureterectomy was done. Below the site at which the ureter crossed the iliac vessels, a 2.5-cm. portion of the ureter was found to be the site of a tumor. Microscopic examination showed the neoplasm to be a polymorphocellular sarcoma.

After rapid convalescence the patient again became able to work, but six months after the operation he returned extremely anemic and dyspneic and two days after his admission to the hospital he died.

At autopsy the ureteral stump was found to be free from tumor, but quite close to the stump there was a tumor the size of a Spanish hazelnut which bulged into the iliac vein. Other findings were metastases at the promontory, at the tracheal bifurcation, in the lungs, and in the left pleura. The left pleural cavity contained 7 liters of a deeply blood colored fluid.

The author reviews also twenty seven cases of carcinoma of the ureter which were not included among the forty nine cases collected by Rousselot and Lamon in 1930. On the basis of the seventy-six cases in the two collections he discusses the pathologic symptoms, and diagnosis of ureteral carcinoma. The most important symptoms are hematuria, pain, and a palpable resistance usually due to the hydro-nephrotically changed kidney but sometimes to the



Sac which had developed five months after ureterotomy

ureteral tumor itself. Of great aid in the diagnosis are cystoscopy, ureteral catheterization and urography. By expert urological examination it is now possible to make a correct, at least probable, diagnosis in the majority of cases.

The treatment is surgical. Complete nephroureterectomy should be done if possible in one stage. There are reports of several cases in which the patient was in good condition one year or longer after this operation. For further improvement in the results the cases must be treated earlier.

BLADDER, URETHRA, AND PENIS

Christopherson J. B., and Ward R. O. Bilharzia Disease in England. *Brit J Surg* 1934, xxi, 632.

The authors report a case of bilharzia disease in a man twenty years of age who apparently contracted the condition in South Africa. The symptoms were pain in both kidney regions and intermittent attacks of hæmaturia over a period of sixteen months. Ova of *Schistosoma hæmatolium* were found in the urine. Cystoscopic examination disclosed an intense bullous oedema surrounding the right ureteral orifice and extending to the trigone, and vesicles of a peculiar yellow color over the entire trigone.

The treatment consisted of intravenous injections of sodium antimony tartrate. A total of 28 gr was given in a period of twenty-eight days, the dose being increased from 1/2 gr up to 2 gr. After 9 gr had been administered, the ova and blood disappeared from the urine.

On cystoscopic examination one month after the last injection the bladder appeared normal except for a few scattered yellow vesicles. These were believed to be dead ova under the mucosa which would be thrown off later.

The relative merits of antimony preparations are discussed. THEOPHIL P. CRAVER, M.D.

Kretschmer H. L., Barringer B. S., Bransch W. F., Dean, A. L. and Others: Cancer of the Bladder. A Study Based on 902 Epithelial Tumors of the Bladder in the Carcinoma Registry of the American Urological Association. *J Urol* 1934, xxi, 423.

Of 902 epithelial tumors of the bladder recorded in the Carcinoma Registry of the American Urological Association, 76.25 per cent occurred in males and 23.75 per cent in females. The greatest number occurred between the ages of fifty-five and fifty-nine years. Seventy-six and six tenths per cent involved the trigone, neck, and lateral wall. Fewer than half of these but over three-fourths of tumors occurring in the vault of the bladder were highly malignant. Recurrences developed in 46.2 per cent of the cases.

In 63.52 per cent of the cases hæmaturia was the initial symptom but in only 10 per cent of these was a complete examination made and the diagnosis established within a month after the first appearance of the hæmaturia. Cystoscopy, biopsy

and X-ray examination were the chief means of diagnosis and proved to be highly accurate. The standard methods of treatment were resection, fulguration, and irradiation. At the end of five years 33.24 per cent of the patients were still alive.

THEOPHIL P. CRAVER, M.D.

Grabčenko I. Cancer of the Penis (Cancer penis). *Istnik Chir* 1933, lxxvii, lxxxix, 222.

Forty cases of carcinoma of the penis were found among 5,157 cases of malignant tumors in males which were treated at the Oncological Institute at Leningrad during the years from 1926 to 1932. Twenty-six of the men with carcinoma of the penis had a phimosis and 6 presented syphilitic lesions of the penis, namely condylomata or scars. The author divides the cases of penile cancer into the following 4 groups: (1) tumors of the penis without palpable metastases, 18 cases; (2) tumors with movable metastases in the inguinal glands, 11 cases; (3) immovable tumors with infiltration of the symphysis and movable metastases in the inguinal glands, 1 case; and (4) immovable tumors with immovable glandular metastases, 6 cases. The 4 remaining cases were cases of recurrence.

The treatment of choice was amputation of the penis at a distance of from 2 to 3 cm. from the edge of the tumor. In the 25 cases treated in this way and followed up from six months to five and three quarters years later not a single local recurrence was found. In 4 of 15 patients in the first group who were operated upon without removal of the inguinal glands metastases appeared in the glands after a time. Of 9 patients in the second group who were treated by amputation of the penis and removal of the inguinal glands, 3 died during treatment. After from two to five and one-half years 3 patients in this group were still free from recurrence. The following conclusions are drawn:

Carcinoma of the penis constitutes from 0.77 to 3.5 per cent of malignant tumors in the male. Phimosis holds the first place among the causes of carcinoma of the penis, and the late results of syphilis the second place. The decisive factor in the diagnosis is biopsy. Surgical treatment is superior to radium therapy both in its simplicity and its results. The cancerous inguinal glands are only slightly amenable to irradiation therapy. Neither a cure nor the prevention of recurrence can be obtained by irradiation therapy. Surgical removal is advisable even for glands which are not suspected clinically to be malignant. After the operation a re-examination should be made every two or three months. N. PETROV (Z).

GENITAL ORGANS

Dickson W. E. C. and Hill, T. R. Malignant Adenoma of the Prostate with Secondary Growth in the Vertebral Column Simulating Pott's Disease. *Brit J Surg* 1934, xxi, 677.

The authors report a case of primary adenocarcinoma of the prostate in a man thirty years of age

which had formed metastases in the pelvic, prevertebral, abdominal, thoracic, and deep cervical lymph glands and the spinal column. The involvement of the bodies of the seventh cervical and first thoracic vertebrae and the adjacent portions of the spinal column and ribs had caused collapse of the vertebral bodies and a condition simulating Pott's angular curvature with compression and softening of the spinal cord and Froun's syndrome with xanthochromia.

This case differed from the case reported by Roberts in which there was a continuous direct spread of the growth on the intraspinal surface of the dorsal wall of the spinal canal. However the authors believe that Robert's theory that there is an intraspinal pathway for the dissemination of prostatic carcinoma, consisting of the spinal laminae with their ligaments and the lymph spaces connected with these structures, may apply to it. The bony metastases in the authors' case were entirely osteoclastic and showed no evidence of the osteoplastic process generally described as characteristic of skeletal metastases from the prostate.

FRANK M. COHEN, M.D.

Muir E. G. Carcinoma of the Prostate. *Lancet* 1934, *ccvii*, 667

Muir reviews the history of carcinoma of the prostate. The first case was reported by Langstaff in 1817. Muir found the condition in 13 per cent of a series of routine autopsies on men over sixty years of age. While it develops in a large number of cases of benign hypertrophy, he questions whether the hypertrophy is in any way a predisposing factor. He also rejects chronic prostatitis and prostatic calculi as causes.

As the symptoms are usually similar to those of benign enlargement, the correct diagnosis can be made only by rectal examination. A long history of urinary difficulty is suggestive of the development of malignancy in a benign hypertrophy. The initial symptom may be pain in the back or other evidence of metastases. The diagnosis is made on the basis of the characteristic rectal findings and the cystoscopic demonstration of nodules or nodules around the internal urethral orifice or trigone. X-ray examination of the pelvis may show metastases and will aid in the differentiation of the condition from prostatic stones.

Histologically Muir divides prostatic carcinoma into three groups. In those of Group 1, which constituted 17 per cent of the tumors in his cases, there is marked tubule formation with well-differentiated cells and no mitotic figures. This is a relatively benign type which metastasizes late. In the carcinoma of Group 2, which constituted 58 per cent of those reviewed by Muir, the tubules are fewer and there are large masses of spheroidal cells. Mitotic figures may be present, and metastases are usually formed. In the tumors of Group 3, which constituted 25 per cent of those reviewed by Muir, there is an undifferentiated cell mass with little or no attempt at tubule formation. The picture may be very simi-

lar to that of round-cell sarcoma. In all of the author's cases metastases occurred and the duration of life was very short.

The lymphatics drain into the glands of the pelvis. Of the cases reviewed 77 per cent showed definite glandular involvement. In 34 per cent there were visceral metastases, and in 28 per cent, metastases in bones. The author discards the theoretical routes of metastatic involvement of bone and comes to the conclusion that there is a combined lymphatic and vascular dissemination. He states that from 80 to 90 per cent of bone metastases are of the osteoblastic type. He attributes this fact to the stimulation of the fibrous reticulum in the bone marrow about the tumor cells.

In discussing the possibility of radical operation for carcinoma of the prostate, Muir states that only Young has had any success with radical surgery. He concludes that the only possible field for radical surgery would be cases of carcinoma belonging to Group 1. With regard to palliative treatment he states that suprapubic prostatectomy should not be done because it not only shortens the patient's life but has a definite operative mortality. He has obtained the best results from palliative suprapubic cystostomy plus X-ray therapy. In cases so treated the average duration of life was three years and six months as compared with one year and six months in cases treated by cystostomy and radium irradiation and one year and two months in cases treated by cystostomy alone. In a number of cases endoscopic resection relieved the urinary difficulty and obviated the necessity for cystostomy. Muir has found the results of the use of radium needles inserted perineally to be distinctly inferior to those obtained with X-ray therapy.

IATRO J. SERRANO, M.D.

Polyquet Gerro, A.: The Technique and Results of Vasculography (Technique et résultats de la vasculographie). *J. d'uról. méd. et chir.* 1934, *xcvii*, 193

The author describes a technique for visualization of the spermatic cord and seminal vesicle by the injection of neo-iodipin. This may be done by catheterization of the spermatic ducts, transrectal or perineal puncture of the seminal vesicles, transcutaneous puncture of the vas deferens, or vasopuncture after inguinal exposure.

The first of these methods is difficult because of reflux into the urethra, and the second and third are dangerous. The author prefers the fourth method. In this procedure the vas is dissected free and the opaque medium injected under vision. Usually 3 or 4 c.c. will fill the tract, whereupon the patient will have a desire to urinate because of reflux of the medium into the bladder from the vesicles. Before the roentgenogram is taken it is advisable to have the patient empty the bladder to get rid of the excess medium.

If the vas is blocked, a more proximal point of injection should be tried. If there is an obstruction at the urethra the patient will immediately feel a

colicky pain and the fluid will flow back through the point of injection.

After the roentgenogram has been made it is advisable to massage the vesicles to get rid of the remaining opaque material. The neo-iodipin may remain in the tract for a week without causing harm. In no case was any interference in function observed.

The author emphasizes the importance of absolute asepsis in the technique and recommends that the patient be kept at rest in bed for twenty-four hours following the injection.

WILLIAM C. BECK, M D

MISCELLANEOUS

Goldstein A E. and Abeshouse, B S: Gas Bacillus Infections in Urology *J Urol* 1934, **xxv**, 547

The authors report a case in which gas gangrene due to the Welch bacillus developed after a perineal prostatectomy. Seventy hours after the operation redness, swelling and emphysema appeared on the lower and outer aspect of the right thigh. This area was drained and irrigated and in an attempt to check the spread of the infection, bacillus welchii antitoxin was injected intramuscularly beyond the outer limits of the crepitant area. Death occurred ninety hours after the operation. At autopsy, Welch bacilli were found in the rectal contents, the prostatic capsule and the perineal wound as well as in the involved area on the right thigh. The manner of development of the gas-bacillus infection could not be determined.

The literature on gas-bacillus infection of the genito-urinary tract is reviewed. The authors emphasize the importance of early diagnosis and immediate treatment of the infection. The treatment of choice is wide incision and drainage supplemented by the intramuscular and intravenous injection of a polyvalent serum.

THEOPHIL P. GRAUER, M D

Price, I N O and King A J: Acute Gonorrhoea Treated with a New Gonococcal Vaccine *Brit M J* 1934 **4**, 748

The authors treated forty-six men suffering from acute gonococcal urethritis of varying severity with a colloidal suspension of gonococcal protein 1 c cm. of which contained the protein of 1800 million gonococci. The vaccine was given subcutaneously. The general reaction ranged from slight headache and malaise to severe rigor with vertigo, nausea, and vomiting.

While the complement fixation test showed that the vaccine was a powerful and promptly acting stimulant to the production of antibodies and while the time necessary to effect a cure was somewhat shortened by the treatment the clinical results were disappointing. The authors believe that specific gonococcal antibodies tend to prevent the occurrence of severe acute complications, but have little effect in eradicating the infection from its localized sites in the genital organs. Persons most likely to be benefited by the vaccine are those with chronic gonococcal complications such as arthritis.

FRANK M. COCHREAN, M D

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Gurd, F. B.: Post Traumatic Acute Bone Atrophy (Sudeck's Atrophy) *Ann Surg* 1934, xcix, 449

In post-traumatic acute atrophy of bone some times called 'Sudeck's disease' the bones rapidly become porotic within a few days after an injury which may have been trivial. The hand or foot becomes more and more swollen and painful. The skin may become glossy and the joints more or less stiff. Absolute rest relieves the pain, and use and weight bearing are not tolerated. The soft tissues, ligaments, and cartilage also atrophy sometimes to an extent sufficient to cause subluxation of a joint. The roentgenogram shows patchy areas of diminished density of all bones in the region of the trauma. Sometimes a mistaken diagnosis of tuberculosis is made on the basis of the roentgen findings. Characteristic of the disease is the fact that the symptoms and objective findings are out of all proportion to the trauma. Although the condition is followed by reconstruction of the bone architecture and return of function, there are many cases in which complete recalcification never takes place.

Pathological study of specimens of the bones shows that the absorption is not due to osteoclasts. There seems to be a uniform loss of bone substance not merely a deficiency of mineral salts. A photomicrograph of a carpal bone from an atrophied hand shows a diminution in the number and thickness of the bony lamellae.

The condition occurs almost always in the foot or hand or in the vertebrae (Kummell's disease) and rarely in the shafts of the long bones. The author has seen fourteen cases in six years.

Several theories regarding the etiology of the disease have been advanced. The most plausible ascribes the atrophy to a vasomotor disturbance brought about through reflex channels, the trauma acting on the sensory nerves and thereby causing a reflex action on motor nerves through the spinal ganglia. Hyperemia seems to be a necessary factor in the absorption of bone.

The treatment should include active use as soon as possible. A good prophylactic measure is having the patient walk in a non-padded cast soon after the injury. Sympathectomy has been done by Lencze but in the author's opinion this radical procedure is indicated only in extreme cases. For the upper extremity diathermy and active exercise are valuable methods of treatment.

This article contains tabular reports of two series of cases—one of fourteen and one of twenty-one cases—and detailed reports of four cases treated by the author.

WILLIAM ARTHUR CLARK, M.D.

Schulze, W.: The Causes of the Deposition of Bacteria in the Bones (Ueber die Ursachen der Bakterienablagerung im Knochen) *Arch f Klin Chir* 1933 cxviii, 450

According to the findings of Lexer the frequent localization of the foci of infection in the metaphysis in osteomyelitis and tuberculosis is due especially to the distribution of the vessels in this part of the growing bone. As Nussbaum and Randerath raised objections to Lexer's conclusions, Schulze undertook further investigations on the problem.

He states that between the epiphyseal and metaphyseal vascular regions of the long bones in human beings and numerous animals there are connecting arterial branches penetrating the cartilaginous symphysis which are demonstrable even before complete ossification of the epiphyseal line. Nussbaum denied this because they are not present in the dog but conclusions regarding conditions in man cannot be based on this finding in the animal. The vessels are demonstrable in injection preparations of the newborn. Moreover it has been proved that there is a difference in structure between the metaphyseal and the subchondral epiphyseal capillaries. The former have an elongated hairpin shape while the latter form a coarse network with nodular projections toward the cartilage. It is to be assumed that in the elongated capillaries there is a very slow blood current. Moreover in the vicinity of these capillaries there are no powerful protective cells of the marrow which are active in the presence of infection. In India ink preparations it was demonstrated very definitely that the ink was absorbed much more slowly in this region. In young dogs, the India ink may induce a spherical disturbance in the growth of the metaphysis of long bones by producing embolic closure of a branch of the nutrient artery. This nutritional disturbance demonstrates that the large metaphyseal nutritional arteries of the metaphysis are end-arteries. In experiments on young rabbits it was possible by injecting suspensions of tubercle bacilli into the aorta, to produce tuberculous foci which roentgenologically and histologically were similar to certain forms of osseous tuberculosis and congenital osseous syphilis in man. In contrast to Randerath, the author concludes that the characteristic form of the infections in man is due to the characteristic structure of the blood vessels.

A. BREYER (2)

Buchanan, J.: The Rationale of the Treatment of Chronic Osteomyelitis with Special Reference to Maggot Therapy. *A Surg* 1934, xcix, 51

Following the war three standardized methods were developed for the treatment of osteomyelitis, namely, the Carrel-Dakin method, the Orr tech-

nique and Baer's maggot treatment. The ideal method of treatment must meet the following requirements (1) thorough surgical removal of all diseased tissue (2) efficient and continuous sterilization of the new wound, (3) efficient and continuous removal of wound discharges and dead tissue and (4) stimulation of the formation of granulation tissue so that the cavity will be entirely filled before scar tissue contraction sets in.

The Carrel Dakin method meets only two of these requirements, namely thorough surgical removal and washing out of dead tissue. The Orr method in addition, produces self-sterilization of the wound by the formation of bacteriophage under the vaseline packs. Albee introduces stock cultures of bacteriophage during the operation.

The maggot treatment meets all the requirements. The maggots remove micro-organisms and small sloughs by ingestion form a proteolytic enzyme which dissolves all dead matter and by crawling about in the wound irritate it sufficiently to stimulate the rapid growth of granulation tissue.

The author reports two cases in which the condition was cleared up by the maggot treatment after other methods had failed. The normal appearance of the bone after healing is shown in roentgenograms.

MAURICE L. DALK, M.D.

Van Gorder G W: Tuberculosis of the Shaft of Long Bones. A Report of Six Cases. *J Bone & Joint Surg* 1934 xvi, 269

Van Gorder reports six cases of proved tuberculous of the shafts of long bones. The ages of the patients ranged from nine to twenty-one years. The condition was manifested clinically by local thickening of the affected bone, pain, muscular wasting and in the late stages, abscess and sinus formation. The findings of the general physical examination were not striking. The author states that from the clinical picture alone it would be difficult to establish the presence of tuberculosis of the shaft of a bone with certainty.

The roentgenographic findings common to all of the cases were a central origin of the condition, abscess formation and abscess of sequestra production. However the reaction of the surrounding bony tissues to the abscess varied considerably in different regions of the shaft. The characteristic local expansion helped to differentiate the lesion from Brodie's abscess and simple bone cyst. Giant-cell tumor rarely occurs in the mid-portion of long bones. The roentgen appearance of tuberculosis may closely resemble that of syphilis. In one of the cases reported the condition was believed to be syphilis until it was proved to be tuberculosis by pathological examination.

All of the cases were treated by subperiosteal excision of the local lesions with careful and thorough removal of all suspicious tuberculous tissue. In the majority the wound was sutured tightly without drainage. In five cases a complete cure was obtained.

PAUL C. COLONNA, M.D.

Pelini M: Unusual Roentgen Findings in Two Cases of Multiple Tuberculous Lesions of Bone (Non comune quadro radiografico in due casi di tubercolosi ossea a localizzazioni multiple). *Radiol med* 1934 xvi, 97

The two cases reported in this article were those of children. One of the children was two and a half years old and the other six months. The lesions presented a varied roentgen appearance, but were characterized by absence of atrophy around the osteolytic areas, predominance of osteosclerosis over osteolysis, and a sharp, many-layered ossifying periosteal reaction in the diaphysis and metaphysis. These findings are not suggestive of tuberculosis but the lesions were proved to be tuberculous by serological and bacteriological studies.

The author cites these cases to emphasize that in children up to the age of nine or ten years it is impossible to make a diagnosis of tuberculosis on the basis of the signs indicating tuberculosis in adults. In the cases of children, roentgenography is of secondary importance to clinical and laboratory procedures because, in the young, the roentgen appearance of osseous tuberculosis is atypical and variable in some instances even suggesting lesions such as gummata and chronic osteomyelitis. BOUQUE T. LEROY, M.D.

Craven, E. B., Jr: Splenectomy in Chronic Arthritis Associated with Splenomegaly and Leucopenia (Feltz's Syndrome). *J Am Med Ass* 1934 cli, 833

The syndrome of chronic arthritis, splenomegaly and leucopenia was first reported in 1924 by Feltz. In 1932 Hanrahan and Miller reported that they had noted clinical improvement following splenectomy in this condition. In the case reported by Craven, splenectomy resulted in temporary improvement of the arthritic symptoms and an increase in the white cell count for several months. Craven reviews all of the reported cases and calls attention to the fact that in most of them there was a persistent eosinophilia. CHESTER C. GOY, M.D.

Iovino, F: Autogenous Grafts of Muscle and Nerve Supply (Autotrapianti muscolari e connessioni nervose). *Ann Ital di chir* 1933 xu, 1521

Iovino reports experiments he carried out with regard to the controversial question of the survival of grafts of striated muscle, particularly when innervation is re-established in the transplant and the nerve supply of the receiving muscle is cut. His work was essentially a repetition of the experiments of Comolli who in 1932 carried out investigations to determine whether innervation can be completely re-established in autoplasmic grafts of striated muscle and whether if it could the graft would be capable of functioning. In forty five experiments carried out on different muscles of the legs of rabbits Comolli found that if the innervation of the receiving muscle remained intact, the graft degenerated even if its innervation was re-established.

but if the nerve supply of the receiving muscle was cut and the innervation of the graft was re-established function was taken over by the transplant, which remained well preserved for from three to five months. He concluded that a graft survives insofar as it is in condition to react adequately to specific stimuli, and that it can function if the receiving muscle is paralyzed.

The author was unable to verify Comoli's findings. His grafts survived for two months but after four months they degenerated and became replaced by connective tissue. Regeneration of muscle fibers was doubtful at the most. It was found only at an early period and near the graft and it soon disappeared. Lovino concludes that at least for the present, the orthopedic surgeon cannot utilize muscle grafts to correct the sequelae of poliomyelitis.

The experiments and histopathological findings are described in detail, and the history of investigations of this type is reviewed. The article contains photomicrographs and is supplemented by a bibliography of the European literature.

M E MOORE, M D

Delgoffe, A.: So-Called Enucleation of the Atlas and Torticollis (*La soi-disant énucléation de l'Atlas et le torticollis*). *Rev. d'orthop.* 1934, xii, 5.

The author reports the case of a ten-year-old girl who awakened one morning with a deviation of the head to the left. She complained also of slight pain in the head and neck but this did not prevent her from playing. The incorrect posture became gradually more marked until it reached its maximum at the end of a month. There was never any fever or dysphagia.

When the child was seen by the author the inclination of the head to the left was combined with a rotation which caused the face to turn to the right. Both sternocleidomastoid muscles were practically normal, showing no contraction or retraction, but there was a slight cervicothoracic scoliosis with the convexity to the left. The child held the neck rigid and refused to execute any movement because of the sharp suboccipital pain. On palpation of the pharynx no abnormal projection was felt. Other examinations were essentially negative.

Cervical traction of about 6 lb was applied. After forty-eight hours the pain was completely relieved and the child was able to flex and extend her head. After four weeks she left the hospital well on the way to recovery.

This case shows that acquired torticollis may be non-traumatic and may occur without traction of the sternocleidomastoid muscle. Cervical arthritis as the cause of the condition was ruled out by roentgen examination. Retropharyngeal lymphangitis with subsequent spasm of the suboccipital prevertebral muscles could not be proved. In the roentgenogram taken through the open mouth the atlas masses did not appear to be equidistant from the odontoid process. The left mass seemed deflected outward so that a large part of its anterior aspect was projected far

from all contact with the corresponding surface of the axis, whereas in its internal aspect its contour slightly overlapped that of the axis. To the right there was slight articular compression, but otherwise the surface was normal. In the half-profile or three-quarters view the left atlas mass was seen to have slipped forward so that the posterior part of the surface of the axis was exposed.

The author states that these are the characteristic signs cited by Griesel as indicative of total dislocation of the atlas due to nasopharyngeal disease. However when similar roentgenograms were made of a group of normal girls between the ages of eight and ten years the same changes were found when the head was held in the same position.

Delgoffe concludes that the changes shown by the roentgenogram in the case reported were due to laxity of the interarticular ligaments and were within the physiological limits of action of the articulation. He does not offer any suggestion as to the primary cause of the deviation of the head.

JAMES K. STUCK, M D

Conway F M.: Syphilis of the Clavicle. *A. S. Surg.* 1934, xii, 590.

Three cases of syphilis of the clavicle are reported. The first was that of a woman fifty years of age who had had a painful swelling in the shaft of the clavicle for ten days. There was no history of injury. The tumor was hard and tender but there was no increase in the local temperature or other sign of inflammation. The roentgenogram showed both destructive and productive changes in the bone. The Wassermann reaction was 4+. Complete disappearance of the symptoms occurred after about six months of antiluetic treatment.

The second case was that of a woman twenty-three years of age who had a spontaneous fracture of the clavicle and thereafter noticed a hard, tender lump on the bone. The Kahn test was 4+. The roentgenogram showed a fracture surrounded by rarefaction and an increased periosteal reaction.

The third case was that of a woman thirty years of age who gave a history of swelling and pain in the clavicle for six months. A firm round swelling the size of a small lemon was found attached to the bone. The Wassermann test was 4+. The roentgenogram showed a fracture and periosteal thickening.

In the differential diagnosis it is necessary to rule out sarcoma, tuberculosis, and Paget's disease. As in syphilis of other bones, the lesion may take the form of a periostitis, an osteoperiostitis, a gumma, or a hyperostosis. Each of these forms may represent a different stage of the same pathological process. In the hyperostotic form the soft tissues are not involved as in the gummatous form.

The diagnosis is based on the history, the findings of roentgen study, the serological reaction, and the response to treatment. Pain and swelling are always present. The periosteum usually undergoes proliferation and may form "bone blisters" by localized elevations. In the spongy bone there are areas of

diminished density. Frequent roentgen examination during treatment will yield valuable information for if the diagnosis of osseous syphilis is correct rapid improvement in the appearance of the bone is to be expected under specific treatment.

WILLIAM ARTHUR CLARK, M D

Koetzie: Expert Opinion Regarding Traumatic Necrosis of the Lunate Bone (Zur Unfallbegutachtung der Mondbeinnecrose) *Monatsschr f Unfallheilk.*, 1933 XI 605

The author reviews the etiological factors responsible for necrosis of the lunate bone and emphasizes that the condition may occur without injury. The fact that it may occur bilaterally also demonstrates that it is not an injury but a disease. Koetzie reports two cases in which expert medical opinion was sought.

The first case was that of a man who had sustained a typical transverse fracture of the navicular bone of the right wrist on the battlefield in 1916. The fracture was first demonstrated by a roentgenogram made in 1930. The right wrist was completely ankylosed. The roentgenogram showed an unhealed transverse fracture of the navicular bone with irregular atrophy of both fragments, a deforming arthrosis of the wrist, and beginning necrosis of the lunate bone manifested by widening and shortening of that bone. Evidently there had been no injury of the lunate bone in 1916. Even at this time there were still no signs of a fracture or fissure. The author believes that in this case the changes in the lunate bone were probably related to the old changes in the navicular bone.

In the second case the allegedly injured hand had been hyperextended backward on June 19, 1929. After a brief interval, the patient resumed his work. On the following day a physician prescribed the wearing of a wrist band because of a slight swelling. On January 17, 1930, the patient complained of pain in the wrist which he attributed to the injury of June 19, 1929. The roentgenogram showed no bone injury and no fracture of the lunate bone. The patient was treated continuously until the spring of 1933. Recognizing the condition of the lunate bone as the result of an occupational injury the insurance commission granted him compensation for disability of 15 per cent. The union to which the patient belonged appealed to the National Insurance Commission and requested the author for an expert opinion. The author denied that the disease was of traumatic origin. He stated that although the patient had sustained an occupational injury to the right wrist on June 19, 1929 this injury had been slight and had had only temporary results. As was evident from the roentgenogram made in 1930 there had been no compression fracture of the lunate bone.

Koetzie states that necrosis of the lunate bone is a disease which has an insidious onset and in very many cases begins without trauma. It also may occur bilaterally. Pathogenetically it is to be classified with the epiphyseal necrosis of the bones of the

extremities. The malformation resulting from the necrosis of the lunate bone leads secondarily to a deforming arthrosis of the radiocarpal articulation. The fracture of the bone may occur spontaneously or as the result of an external force either a single trauma or more frequently the daily use of the hand, especially during work. Under the latter circumstances it may be regarded as an occupational disease. To be differentiated from it are compression fractures of the lunate bone which, like fractures of the navicular bone, occur when on ulnar flexion of the hand, the lunate bone comes into contact with the articular surface of the radius in its entire extent and during trauma acts as a buffer between the metacarpus and the bones of the forearm. A compression fracture of the lunate bone may result in necrosis from traumatic rupture of all nourishing blood vessels. The already diseased lunate may collapse as the result of trauma. A relationship to trauma is to be assumed only when the trauma was considerable and made it necessary for the patient to give up work immediately after its occurrence.

In conclusion the author cites briefly a case of malacia of the lunate bone due to an electrical shock which was reported from the surgical clinic of Halle

HAUHMANN (Z)

Giraudi G. The Centers of Ossification So Called 'Pseudo-Epiphyses' of the Trochlear Surfaces of the Phalanges and the Heads of the First and the Bases of the Last Four Metacarpals and Metatarsals (I punti d'ossificazione, cosiddetti "pseudo-epifi" della troclea delle falangi, del capitulo dei primi e della base dei quattro ultimi metacarpi e metatarsali) *Rivista med.* 1934, XV 203

Giraudi reports his roentgen findings in cases of various abnormal conditions, including more than thirty cases of congenital malformations, three cases of achondroplasia and seven cases of osteochondropathia multiplex.

Endochondral ossification of the trochlear surfaces of the proximal and middle segments of the phalanges of the hand and foot and the bases of the second to the fifth metacarpals and metatarsals is of three types. In Type 1, the primary diaphyseal center of ossification extends on a closed front to the articular cartilage. This is the usual form. In Type 2, the diaphyseal center sends into the epiphyseal cartilage a bud or 'pseudo-epiphysis' which later grows toward the periphery while still remaining connected with the diaphysis by an osseous bridge. In Type 3, a true complementary epiphysis develops. The already obscure problem of pseudo-epiphyses is complicated still further by the fact that the majority of surgeons refer to the third type as a 'pseudo-epiphysis'.

In connection with a review of the literature Giraudi discusses the frequency, origin, structure and significance of pseudo-epiphyses as he defines them. So-called pseudo-epiphyses often

occur in congenital deformities of the extremities, in which they have a teratological significance in the most varied anomalies of the head and trunk (microcephaly, congenital heart disease, megacolon) in endocrine disorders in systematic diseases of the skeleton and in a group of affections associated with disturbances of prenatal development (congenital syphilis, malignant tumors in infancy). They persist longest and hence are found most often in situations farthest from the diaphyseal centers of ossification. They are never found in the distal segments of the phalanges. They are more frequent in males than in females, and a familial history of their occurrence is common.

Because of the paucity of anatomical data, theories as to the form of these centers are based almost exclusively on roentgen studies. Knowledge of the finer structure, which may vary according to whether the condition is normal or pathological, is very limited as only exceptional cases have been studied histologically.

The hypotheses regarding the significance of pseudo-epiphyses are as follows:

1. The theory that they are simple variations. This theory is particularly applicable to the centers in the heads of the first metacarpal and metatarsal and the base of the second metacarpal.

2. The phylogenetic theory which is based on the fact that the acromegalic long bones of some aquatic animals have normally two centers of ossification.

3. The degenerative theory which partly overlaps the phylogenetic theory and appears to apply particularly to cretinism, idiocy and arachnoidacty.

4. The endocrine theory which is the most widely accepted theory but is not applicable to all cases.

5. Stettin's theory that pseudo-epiphyses are signs of a disturbance of prenatal development.

Giraudi believes that all of these theories contain elements of truth, but that none covers the entire field. He states that in the present state of our knowledge it is possible to say only that these centers have a non-specific pathological significance, teratological or nosological and often endocrinopathic.

The article contains numerous illustrations and has an extensive bibliography. M. E. Moxon, M.D.

Rogers, S. P.: Observations on Torsion of the Femur. *J. Bone & Joint Surg.* 1934, vii, 534.

This report is based on examinations of the hips of a large number of normal children and a smaller group of children whose hips were affected by disease or deformity. The angle of torsion of the neck of the femur was determined by fluoroscopic examination according to a technique previously described by the author.

The findings demonstrate the response of living bone to the stimulus of function and show that in general the longer the duration of disability and the younger the individual at its onset the greater will be the increase in torsion.

The author believes that in congenital dislocation of the hip the anteversion is the result, not the cause,

of the dislocation. In several of the cases studied following reduction he found that the torsion of the reduced hip after walking was permitted approached the torsion of the normal side.

PAUL C. COCORA, M.D.

Murard, J.: An Oleoma of the Knee Present for Fifteen Years; an Artificiel Tumor Caused by the Injection of Vaseline Oil (Oleoma du genou datant de quinze ans. Tumeur artificielle provoquée par injection d'huile de vaseline). *Rev. d'arthop.* 1934, vi, 37.

When the considerable number of injections of oil made daily without thought is taken into consideration it is evident that oleomata are not frequent. The author reviews the French literature on such tumors and reports a case. He calls attention to the fact that the body does not remain indifferent to foreign substances of any character. It makes an effort to eliminate or encyst them.

Some organisms are more sensitive to the injection of oil than others; some react unfavorably to even the topical application of vaseline. Not only vegetable but also mineral oils may cause a reaction.

In the case reported by the author the patient had received an injection of vaseline about the knee fifteen years before the onset of the condition for which he consulted the author. The disturbances were precipitated by a fall on the knee. The fall was followed by an external wound which did not heal and continued to grow deeper. The base of the wound showed a dense, blackish mass. No exudate emanated at the time of the injection; no inflammatory reaction followed, and the patient was never uncomfortable. It was only the development of the wound and its failure to heal which prompted him to seek advice.

The operation of total ablation and the gross and microscopic character of the tumor are described. In discussing the treatment of such tumors in general the author states that complete extirpation as far as healthy tissue should be done whenever possible. In areas in which such a complete operation cannot be done without mutilation, physical measures such as electrolysis or ionization must be used. In the complete operation the problem of plastic repair of the defect is of importance as the skin is usually invaded by the tumor. If the extirpation is done too close recurrence may develop, and if it is too extensive, sloughing may occur.

JAMES K. STACK, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Keith W. S.: Small Bone Grafts. *J. Bone & Joint Surg.* 1934, vii, 314.

In bone-grafting experiments on animals the author found that in young animals a large number of osteogenic cells survived as autogenous grafts especially around the periphery of the mass of bone shavings and caused the formation of new bone.

In adult animals the number of cells surviving was much less.

Cortical bone of young animals regenerated in the absence of periosteum and endosteum.

When balled bone was used there was no invasion of the mass of shavings by osteogenic cells from the ends of fragments and no metaplasia of surrounding connective tissue cells to bone-forming cells. At operation it was noted that bleeding was more profuse from the proximal end than from the distal end. This explains why the union of the grafts was more secure at the proximal end than at the distal end. Hence it is important to preserve the blood supply to the graft and favor re-establishment of the circulation of the surface of the graft by preserving the cambium layer of the periosteum.

The stimulus of weight bearing results in complete regeneration of the shafts of bones.

The function of bone grafts as a support is destroyed by fragmentation. Therefore the bone grafts should not be fragmented more than necessary.

The experiments yielded no evidence that metaplasia of other connective tissue cells to bone-forming cells takes place in the new bone formation associated with bone grafting.

J. ELVEN BERKUNER, M.D.

Ringsted, A.: Fourteen Cases of Klenboch's Disease Treated by Removal of the Lunate Bone (Vierzehn mit Mondbeinentfernung behandelte Fälle Klenboechscher Krankheit). *Nord Tid* 1934 p. 57.

After presenting in detail the various theories regarding the cause of Klenboch's disease, malacia of the lunate bone, and discussing the indications for treatment on the basis of an instructive comparison of operative removal with conservative treatment the author reports the cases of fourteen patients whom he treated surgically and re-examined.

The patients ranged in age from seventeen to thirty-five years. Most of them were males, and the majority of the males were engaged in manual labor. The time of observation ranged from nine months to six years after the operation. Eight of the patients completely regained their ability to work the wrist being painless and sufficiently strong and mobile; three had a disability of 20 per cent and three showed no change.

In spite of the operation which consisted in excision of the lunate bone followed by curettage of and the transplantation of fat into the wound bed a beginning arthritis deformans in the radius was revealed by roentgen examination in only one case, whereas this condition has often been recorded in reports of cases treated conservatively. In the wrist roentgen examination showed the following changes: displacement of the os capitatum in the longitudinal direction so that the normal distance between the articular surface of the radius and the capitulum capitati of from 9 to 11 mm. was reduced to from 4 to 5 mm. the wrist being thereby shortened; ulnar displacement of the navicular bone into

the articular surface of the radius with torsion of its axis and, in some cases, ulnar displacement of the entire carpus.

According to the history, the pain usually did not cease until about a year after the operation. Therefore earlier re-examination would have been of little value.

In agreement with Östergaard who reported thirty-four cases, twenty-seven of which were treated conservatively (five with restoration of good working capacity, fifteen with moderate disability, and seven with a completely negative result) and seven cases treated surgically with ultimate complete restoration of working capacity, the author comes to the conclusion that operative treatment is the method of choice for malacia of the lunate bone.

JACOBSEN (Z)

Girardi, V. C. Arthrodesis in Tuberculosis of the Knee (La artrodesis en la tuberculosis de la rodilla). *Rev. de ortop. y traumatol.* 1934, iii, 355.

In the period from February 1930 to July 1933 the author performed arthrodesis in seventeen cases of tuberculosis of the knee. In nine the Lever-Bade technique was used and in eight that of Putti. Of the latter only four are included in this report as in the four others the operation was performed too recently for judgment of the end-results. Of the thirteen remaining cases, eight were those of males and five those of females. The ages of the patients at the time of operation ranged from eleven to forty years. In six cases the left knee was involved and in seven the right. All of the patients had been treated since the beginning of the condition at the Rizzoli Orthopedic Institute by the usual conservative methods including heliotherapy. The duration of the disease ranged from two to ten years. At the time of the operation the knee joint was in proper alignment and in extension. There were no abscesses or fistulae. Mobility of the joints was limited from 5 to 50 degrees. In eleven cases the operative wounds closed by primary union. In the remaining two complete healing was preceded by suppuration for a few weeks but the graft did not become involved. The maximum period of postoperative immobilization ranged from seven to eleven months. In all cases complete ankylosis resulted.

The method of Putti is easier and more certain to produce ankylosis than the Lever-Bade method. It produces much less trauma than articular resection and is followed by ankylosis more quickly. In children and adolescents shortening of the extremity is less when the Putti operation is done than when resection of the joint is also performed.

WILLIAM R. MEZGER, M.D.

Bozeman, E. J., and O. Kane, T. J.: The Treatment of Osgood-Schlatter Disease with Drill Channels. *J. Bone & Joint Surg.* 1934, xvi, 790.

The authors recommend treating Osgood-Schlatter's disease by drilling as they believe that the

fresh blood supply thereby conducted to the diseased bone hastens the process of natural repair. Following operation on the knee they permit weight bearing early. They report, with roentgenograms, six cases treated in this manner.

PAUL C. COLOMBA, M.D.

FRACTURES AND DISLOCATIONS

Tavernier L. and Pouzet, F.: The Treatment of Old Dislocations of the Elbow. The Technique of Operative Reduction. (Le traitement des luxations anciennes du coude. Technique de la réduction opératoire.) *J. de chir.* 934, xlvii, 16.

In an attempt to improve the results in cases of old and poorly reduced fractures and dislocations of the elbow the authors have employed operative measures. They state that the lesions of the dislocated joint vary with the age of the dislocation. For about two months after the injury the articular surfaces of the bones remain intact, but there is a rather marked disturbance in the soft tissues about the elbow. Despite the latter proper apposition can be obtained by open reduction. Later there is definite deformation of the bone which renders perfect apposition impossible even by operative means and often necessitates arthroplasty or resection of the joint.

The aims of treatment are normal solidity, mobility and flexibility. Especially in the cases of children these are apt to be obtained by open reduction. Resection and hemisection of the elbow yield indifferent results.

The authors employ a posterior approach through the triceps tendon. When a Z-shaped incision is made, lengthening of this tendon is possible if desired and the necessity of going through the olecranon is avoided. The posterior approach gives good exposure of the elbow.

Among the factors which may prevent a good result are the formation of bony projections, shortening of tendons and muscles, and deformities of the capsule. These must be taken into account in all operations. Among the important bony formations which must be removed are a plaque on the posterior surface of the brachialis muscle, a plaque between the radius and the humerus, and small formations in the joint. In closing, the authors frequently lengthen the triceps. They encourage early movement.

JOHN W. EYON, M.D.

Oberstimmer J.: The Conservative Treatment of Fresh Fractures of the Shafts of Both Bones of the Forearm. (Die konservative Behandlung von frischen Bruechen beider Vorderarmknochen im Schaft.) *Beitr. Klin. Chir.* 1933, cxviii, 590.

The unsatisfactory results of the treatment of fractures of the shafts of both forearm bones are due to the difficulty of reduction and especially the difficulty of retention of the reduction. Correction of bending of the axis, twisting, and shortening is usually accomplished by suitable traction and fixation. Correction of lateral displacements is more difficult. The difficulties in the maintenance of

reduction are due to the difference in the muscle action on the two forearm bones and the configuration of the ends of the fractured bones which, in oblique fractures, often tend to override. Many fractures are therefore reduced operatively but operative reduction also has disadvantages as it is associated with the danger of infection, open fractures require a longer time to heal than closed fractures, and as less callus is formed in open fractures there is danger of pseudarthrosis.

Operative treatment may be avoided by the Boehler conservative method. In this procedure compound fractures are treated according to the principles followed for closed fractures if they are seen no later than six hours after the injury. They are changed into closed fractures by primary complete closure of the wound after the bruised soft parts have been cut out, the projecting contaminated bone has been removed, and the skin wound has been excised. Because of the wound, traction cannot be applied so strongly as in closed fractures. If the attempt at reduction is not successful, bone suture is undertaken if the wound has healed without infection.

The rules for the reduction of forearm fractures are the same as those for the reduction of all other fractures. In fractures in the upper third above the insertion of the pronator teres muscle the upper fragment lies in supination because of the action of the biceps muscle. Therefore the rest of the arm must be brought into supination. In fractures below the insertion of the pronator teres the arm must be placed in the midposition.

As a rule reduction can be accomplished under brachial plexus anesthesia. Less often, it can be done under local anesthesia. General anesthesia is never used. Full relaxation of the musculature is necessary and frequently is obtained only after a long pull. Countertraction is obtained by means of a band 10 cm. broad placed above the flexed elbow and fastened to a hook in the wall. The band is padded around the upper arm and so cm. beyond the arm a spreader is fastened between the two straps to prevent constriction of the muscles. After reduction, an unpadded dorsal plaster splint is applied from the base of the fingers to the upper third of the upper arm, and another unpadded plaster splint applied from the middle of the palm to the elbow. Both splints are fastened to the arm with a muslin bandage. To prevent later divergence of the fragments toward the interosseous space, a small wooden rod is firmly pressed into the interosseous space on the dorsal and the volar surfaces at the level of the fracture by the flat hand before the plaster hardens. The soft parts are thus pushed outward and displacement of the fragments toward the middle is prevented.

Traction is released after the plaster has set. The area on the upper arm which remains free from protection is enclosed in a plaster bandage. In cases with great displacement and splintering of the fragments, cases of oblique fracture and cases with open wounds over which it has been necessary to cut a

window in the plaster the maintenance of good position is usually not assured by this procedure. In such cases, therefore, fixation is obtained by means of wires. Under brachial plexus anesthesia the fracture is manually reduced by traction and counter traction. Then, under continuous traction, a Beck wire is run through the ulna three fingerbreadths distal to the tip of the olecranon and another through both bones of the forearm in a radio-ulnar direction two fingerbreadths proximal to the wrist joint. In fractures near the wrist the distal wire goes through the second to the fifth metacarpals. Then with maintenance of full traction, a plaster cast is applied from the heads of the metacarpals to the insertion of the deltoid muscle. The pull is not released until the plaster has hardened. The bone is thus fixed by the wire to the plaster and marked displacements of the fragments are impossible. The ends of the wires projecting beyond the plaster are provided with screws which after being covered with cotton, are plastered. Turning of the wires, which might lead to infection, is thus prevented. In these cases also a wooden rod is pressed strongly in to the interosseous space on the dorsal and the volar surface.

In addition to anatomical healing great importance is attached from the beginning also to complete restoration of the function of the arm. If the fingers and hand are very swollen the arm is placed in an abduction splint after application of the plaster. The swelling then subsides. The fingers and shoulder must be moved.

The gravity of a fracture cannot be judged from the degree of displacement. Of more importance in the prognosis is maintenance of the reduction.

The author reviews forty seven cases of fracture of the shafts of both bones of the forearm. Twenty three of the patients were adults and twenty four were children under eighteen years of age. Of the twenty three fractures in adults, six were open and seventeen were closed. Of the six open fractures, two were treated with and four without wire fixation. Of the seventeen closed fractures in adults thirteen were treated with and four without, wires. The twenty four cases of fracture in children included one open fracture and two fractures treated by suture fixation. In children, most closed fractures are subperiosteal, the fractured surfaces are characterized by jagged edges, and the outlook for good retention is presented even when there is marked displacement. In closed fractures in children wire fixation is usually unnecessary. Of the reviewed twenty four fractures in children twenty-one healed in perfect position. In the cases of adults wire fixation was usually necessary. In smooth oblique fractures the fragments tend to override. When the usual plaster fixation is used the condition of the fracture should be determined by roentgen examination, at the latest, after two months. If necessary correction can be accomplished successfully even then by the introduction of wires and fixation in a new plaster cast. Comminuted fractures which

usually have oblique surfaces, always require wire fixation.

In forearm fractures in which the displacement of the radius in the long axis is greater than the corresponding displacement of the ulna the distal radio-ulnar joint must be considered. In such fractures as in fractures of the radius with shortening dislocation or subluxation of the radius occurs at this joint. As persistence of this dislocation leads to serious disturbances in the wrist joint fixation of the radial fragments is especially important and wire fixation is preferable to treatment without wires. In open fractures the same indications hold but when in the course of treatment the plaster cast must be provided with a window because of wound disturbances wires should be introduced if this has not already been done in order to prevent slipping of the fragments into the window.

Of the eight reviewed cases of fractures in adults treated without wire fixation all healed well and of the fifteen treated with wires, the results were excellent in twelve and unsatisfactory in three. In the latter technical errors were in part responsible for the unsatisfactory outcome. As a rule the wires are left in place until there is no danger of slipping of the fragments—usually for from three weeks to three months. If the fracture is then still elastic it is further immobilized in unpadded plaster. The length of time required for firm healing averages from two and a half to three months. The later function of the arm is in no way unfavorably affected by the wire fixation. Of the author's fifteen cases of fractures in adults which were treated with wires, full motion in all joints was obtained in nine. In four the motion at the elbow was restricted. In the case with the least satisfactory results motion was possible between 75 and 150 degrees and pronation and supination were limited about one third. Of the eight adults treated without wires six obtained full motion in all joints. Of the two children who were treated with wire fixation pronation and supination were limited about one third in one but all joints were freely movable in the other. The other fractures in children healed with full motion in all joints. In two cases suppuration occurred along the wires. In three cases the wire broke. Otherwise not the slightest damage was observed. Occasionally the periosteum reacted at the points of entrance and exit of the wire a delicate tube being formed around the wire.

From the anatomical and functional results in these cases the author concludes that the treatment of choice in recent fractures of the shafts of both forearm bones is the use of an unpadded plaster-of-Paris dressing and wire fixation carried out with the proper technique. ERICH HEMPEL (2)

Anderson, R.: *Fractures of the Radius and Ulna. A New Anatomical Method of Treatment. J Bone & Joint Surg.* 1934 21, 379.

In this article Anderson describes an ingenious mechanical device for reducing and maintaining

reduction in fractures of the radius and ulna. By means of pins, one through the upper end of the ulna and one, a half pin, through the lower end of the radius, and a miniature fracture table or tablette, traction can be made on the fragments and correct alignment obtained and held while a cast immobilizing the pins is applied from axilla to knuckles. The half pin is equipped with two square flanges to gauge its penetration into the radius, to insure anatomical rotation when it is placed against the horseshoe of the traction apparatus, and to prevent rotation of the pin in the plaster. Sedewitz slipping of the radius on the pin is prevented by a U-shaped aluminum cuff slipped over the forearm from the ulnar side.

The author states that this device is applicable to compound fractures and with a third wire, to complicating fractures of olecranon and lower humerus. **BARBARA B. SIMMONS, M.D.**

Kulowski, J. Pyogenic Osteomyelitis of the Sacro-Iliac Joint. *Am J Surg* 1934, XLIII, 305

Pyogenic osteomyelitis of the sacro-iliac joint is not so uncommon as is suggested by the paucity of reports on the condition appearing in the literature. Its onset may be acute or insidious. The disease is associated with pain and tenderness in the joint and sciatic radiation. There is no position which will give relief. Motion of the hip is unaffected except in the extremes of flexion and extension. On rectal examination the joint is found to be tender and indurated. Roentgen examination usually reveals some degree of destruction.

The operative treatment recommended by the author is the Bardenheuer-Peque procedure combined with the Orr method. The ilium is strapped downward subperiosteally from an incision along the posterior half of its crest. Its superior and inferior spines, crest, and intrapelvic portion are denuded, and a bony flap of the ilium is removed to expose the sacral articulating surface. All of the necrotic bone is then removed. If a pelvic abscess is present it is exposed by blunt dissection between the roots of the nerve plexus. The wound is flooded with iodine and alcohol and packed loosely with vaseline gauze. A double hip spica is then applied with the joints in the neutral position. Further treatment follows the Orr technique. A leather hip spica is used for from six months to a year after complete healing.

The author reports four cases in which this procedure yielded good results. The patients were males between the ages of fifteen and forty-eight years.

MARTINE L. DILL, M.D.

George, A. W., and Leonard, R. D.: Ununited Intracapsular Fractures of the Femoral Neck. Roentgenologically Considered. *Am J Roent* 1934, XLIII, 433

The authors attribute the almost universally high percentage of unsatisfactory results in intracapsular fractures of the neck of the femur to inaccurate reduction rather than to an inadequate blood supply

to the head fragment. They believe that the fracture is caused by a torsion strain of internal rotation and adduction of the thigh with the antero-inferior lip of the acetabulum as the fulcrum, and that the displacement is produced by the subsequent fall or attempts at motion or weight-bearing. The usual displacement is that of external rotation of the distal fragment with the neck anterior to the head. This is diagnosed most easily by means of the vertical roentgenograms obtained with the use of the curved cassette. Adequate reduction "now becomes a simple procedure of four maneuvers: (1) extension, (2) adduction, (3) internal rotation, (4) abduction." The position must be checked by means of the vertical roentgenogram.

The vertical view aids in determining the condition present in old ununited fractures of the femoral neck in which the anteroposterior films suggest absorption of the neck. **BARBARA B. SIMMONS, M.D.**

Gérard-Marchant, P. and Castaldi, A. J.: The Surgical Treatment of Dislocations of the Knee. *Le traitement chirurgical des luxations du genou*. *de chir* 1934, XLIII, 183

The authors believe that in dislocations of the knee better results can be obtained by early surgical treatment than by the usual orthopedic treatment. Of 400 cases studied by them, forward dislocation occurred in about 45 per cent, posterior dislocation in about 30 per cent, external lateral dislocation in 20 per cent and internal lateral dislocation in about 5 per cent. Anterior dislocation is most apt to be produced by violent hyperextension. In complete dislocation the capsule is nearly always torn posteriorly and the blood liberated may escape into the tissues surrounding the knee. When an anterior dislocation is associated with lateral rotation, at least one of the lateral ligaments in addition to the crossed ligaments is torn. In posterior dislocations the lateral ligaments are even more likely to be torn. The articular cartilages may not be torn or injured, but the crucial ligaments are nearly always injured. Lateral dislocations are usually accompanied by tears of both types of ligaments, though the lesions are often incomplete.

If cases of dislocation are followed up it will be found that the number of poor results parallels the number of lacerations of the lateral ligaments.

Vascular lesions and opening of the knee joint capsule constitute absolute indications for operation. An irreducible dislocation is an equally distinct but less urgent indication. The authors believe that in ordinary dislocations damage to the lateral ligaments is an adequate indication for operation.

Operative measures are of advantage because they permit removal of the hematoma, ablation of a ruptured meniscus, suture or resection of torn oblique ligaments, and suture or strengthening of the lateral ligaments with fascia lata or tendons from some of the muscles about the knee joint.

The authors make a "U"-shaped incision with the open end up. It extends below the tibial tuberosity

The latter is then cut off and rolled back with its attached patellar tendon. Such an incision gives adequate exposure and may easily be prolonged upward so that fascia lata may be obtained.

JOHN W. ERTON M.D.

Steward, A. and Nutcrick H.: The Surgical Treatment of Fractures of the Calcaneus (A propos du traitement chirurgical des fractures du calcaneum) *J de chir* 1934 XLIII, 374

In order to correct the shortening and angulation of the calcaneus due to the upward pull of the tendo achillis and the forward pull of the plantar muscles, the authors have made modifications in the operative procedure for fractures of the calcaneus which facilitate the anatomical reposition of the fragments.

The skin incision is curved around the back of the heel "en éperon" with the internal arm very short, the external arm extending to a point one finger breadth behind the base of the fifth metatarsal and curving slightly upward on the dorsal surface. This incision is placed at the junction of the skin of the foot with the skin of the sole as the low incision heals with less danger of necrosis of the skin edges.

A tenotomy of the tendo achillis is necessary to enable the surgeon to correct the angulation of the fragments and to force the great tuberosity of the calcaneus downward and backward.

After the fragments are forced apart they are held in the corrected position by osteoperiosteal grafts previously prepared from the tibia.

On completion of the operation, a simple bent splint is applied to hold the foot at right angles and the knee in partial flexion. After removal of the stitches on the fifteenth day a plaster-of-Paris dressing may be applied.

Six cases in which the described operative technique was used are reported in detail.

BARBARA B. STIMSON M.D.

ORTHOPEDICS IN GENERAL

Castagni A. The Influence of Ultraviolet Irradiation on the Formation of Osseous Callus (Influenza delle radiazioni ultraviolette nella formazione del callo osseo) *Chir d'organi di movimento* 1933 xviii, 396

The author first reviews the theories of Rollier, Baldmann, Spolverini, Koeppel, and Serono on the influence of ultraviolet irradiation on the formation of osseous callus. He then reports experiments which he carried out on eight rabbits. Following fracture of both radii of the rabbits the right side was exposed to the ultraviolet light for ten minutes at a distance of 40 cm. every day for five days and then every other day for the duration of the experiment. Both roentgen and histological examination showed better new formation of callus in the irradiated radii than in the control extremities. The author concludes that ultraviolet irradiation has an efficient local effect.

In experiments carried out by Conti on the fractured femora of rabbits to determine the effect of ultraviolet irradiation and the injection of calcium chloride on the formation of callus, healing was found to be improved only when both of these treatments were combined. The author attributes the disagreement between his and Conti's findings to differences in the technique and the quantity of ultraviolet irradiation used. Castagni administered strong doses at a shorter distance and at more frequent intervals.

BARBARA B. STIMSON M.D.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Reich, R. S.: *The Pulses of the Foot*. *Ann Surg* 934, 1921, 613

The early or mild case of peripheral circulatory disturbance presents much more difficult problems of diagnosis than the advanced case. The laboratory methods of aid in the diagnosis are the oscillometer test, the intradermal saline test, and the use of the thermocouple. Clinically the diagnosis of arterial occlusion is aided by a drop in the local temperature, loss of the natural color in the area affected, and, particularly, absence of the pulse of the foot. The pulses of the foot are considered a cardinal criterion of the efficiency of the peripheral circulation. Buerger regards absence of the dorsalis pedis pulse as a very important sign of peripheral circulatory disease.

As an erroneous diagnosis of peripheral circulatory disease has often been made because of apparent but not actual absence of foot pulses, Reich undertook a study of the arterial pattern in seventy legs of white cadavers. The following patterns of anomalous arterial circulation were found:

In one foot the anterior tibial artery subdivided into a larger tarsal artery and a smaller dorsalis pedis, and the arcuate artery was a branch of the lateral tarsal. Reich states that during life the dorsalis pedis pulse might easily have been overlooked because of the small caliber of the dorsalis pedis artery, but a pulse would have been palpated in the lateral tarsal artery over the lateral cuneiform bone.

In two specimens there was complete absence of the dorsalis pedis, the interosseous space being supplied in one of them by the dorsal arterial tree and in the other by the medial plantar artery.

In two feet the dorsalis pedis was not recognizable even as a loop, and the anterior tibial continued downward as a central channel greatly reduced in size. The dorsum of the foot was supplied by the plantar arteries and the pattern became quite complex, the channels being small and clinically non palpable.

In six specimens the anterior peroneal branch from the posterior tibial artery supplied the dorsum of the foot.

Reich concludes that the dorsum of the foot may derive its arterial supply (1) directly through the anterior tibial (2) from the plantar vessels, or (3) indirectly from the posterior tibial artery through its anterior tibial branch.

A study of the posterior crural region in the seventy legs examined disclosed one specimen in which the popliteal artery bifurcated rather high into two branches, of which the peroneal artery was obviously the main branch. The posterior

tibial was considerably reduced in caliber and formed a long loop with the peroneal, which continued downward as a source of arterial supply to the foot taking the place of the posterior tibial branch.

In another specimen the distribution was essentially the same, but the posterior tibial loop was much smaller and both channels were greatly reduced in size. Reich believes that this pattern would undoubtedly have caused difficulty in palpation during life.

Another specimen showed complete attenuation of the posterior tibial loop except at the point where this loop joined the main arterial trunk formed by the posterior tibial, continuing as a very small posterior tibial and still smaller peroneal branch.

Reich concludes that the vessels of the leg below the knee present a pattern of somewhat unstable character altogether different from the constant and clear-cut picture presented in textbooks.

Of the seventy limbs studied, fifty-two (74 per cent) had prominent dorsalis pedis arteries. In five (7 per cent) the lateral tarsal was the larger. In ten (14 per cent) the lateral tarsal was the main artery of the dorsum of the foot. In seven, the dorsalis pedis was very small, and in three it was entirely absent. In five (7 per cent) of the cases the lateral tarsal artery was small, and in three (4.3 per cent) it was entirely absent. In three cases, both the dorsalis pedis and the lateral tarsal arteries were absent.

Reich concludes that the dorsalis pedis artery can be palpated in from 75 to 80 percent of lower extremities, and the lateral tarsal in about 14 per cent. If the dorsalis pedis pulse is not found in its usual location, the examiner should feel for a pulse more laterally situated on the dorsum of the foot, approximately over the head of the third metatarsal bone.

In the 3.5 to 5 per cent of legs in which the posterior tibial artery is absent, there is no posterior pulse, and in a further 3 per cent the pulse is very weak.

Palpation of the pulses may be rendered difficult or impossible not only by arterial anomalies but also by adiposity and oedema. In addition, the ligamentum laciniatum covering the posterior tibial artery as it proceeds downward and around the malleolus may conceal the pulse of this artery even if the vessel is normal.

In discussing the application of his findings to the diagnosis of circulatory disease of the lower extremity below the knee Reich says:

"The presence of pulses of the foot rules out circulatory disease; absence of the pulses of the foot is an important aid in diagnosis if supported by other more positive evidence, but in doubtful and

borderline cases absence of the pulses of the foot must not be construed as a pathognomonic sign because of the relative frequency of obscured or irregularly placed foot pulses, a condition rendered still more confusing by the presence of adiposity or oedema.

Shaw R. C. Surface Temperature Test in Vascular Occlusion and Vasomotor Spasm; Its Value in Relation to Sympathectomy. *Arch Surg* 1934 xiv, 706

From his studies the author concludes that the estimation of the potential rise in surface temperature is a useful index of the degree of vasospasticity of the dermal blood vessels and can be applied particularly in pure vasomotor conditions such as Raynaud's disease. On the other hand the application of such tests in cases of occlusive vascular disease, such as thrombo-angiitis obliterans is of very slight value because of the factor of possible error because considerable hyperthermia is not necessary for relief of the symptoms or healing of the peripheral lesions, and because, although these cases exhibit varying degrees of vasospasticity of the surface blood vessels, ganglionectomy is by no means able to overcome the effects of a complete block of the deeper vessels (as was shown in the case reported in this article) and it is suggested that some change other than mere vasodilatation may be necessary for a successful result from sympathectomy.

JOHN J. MALONEY M.D.

Reid, M. R.: The Diagnosis and Treatment of Peripheral Vascular Diseases. *Am J Surg* 1934 xiv, 11

Following a brief review of the early history of peripheral vascular diseases the author discusses the treatment of the disturbances caused by obliterative peripheral vascular diseases. Most classifications of peripheral vascular diseases are based on clinical and histopathological studies because, except in a few instances almost nothing definite is known regarding the causes of the various peripheral vascular diseases now recognized. For a clearer understanding of the nature of peripheral vascular disturbances and a more rational therapy the present tendency is to attempt to classify vasomotor conditions into two main subgroups viz. vasospastic and vasodilatory disturbances. A very important result of the study of the rôle of the vasomotor nerves in peripheral vascular disease is the realization that these nerves may play a large part also in conjunction with the organic vascular disease. While this part may be a continuous one it is especially important to realize that it may be a temporary part which is often a determining factor in the causation of gangrene. The intense vasospasm incident to the rather sudden occlusion of the peripheral arteries by embolism or thrombosis or following exposure to cold and infection probably plays a larger rôle in the threatening gangrene than does the inadequacy of the collateral arterial circulation. In modern vas-

cular surgery it has become important, not only to be able to recognize the pure vasomotor peripheral disturbances, but also to evaluate the permanent and temporary rôles which the vasomotor nerves may play in the course of primary organic vascular diseases.

The author presents the following classification of peripheral vascular diseases

- A. Primary vasomotor disturbances
 - a. Vasoconstrictor disturbances
 - (1) Raynaud's disease
 - (2) Acrocyanosis (acro-asphyxia chronica, acroparesthesia, sclerodactylia)
 - b. Vasodilatory disturbances
 - (1) Erythromelalgia
 - (2) Acute painful osteoporosis (?)
- B. Primary organic diseases of the arteries
 - a. Traumatic (chemical and thermal)
 - (1) Embolism and simple thrombosis
 - (2) Arteriovenous aneurism
 - (3) Phenol and all caustics
 - (4) Frostbite
 - b. Inflammatory (toxic)
 - (1) Thrombo-angiitis obliterans
 - (2) Specific arteritis (syphilitic, tuberculous, periarthritis nodosa pyogenic)
 - (3) Non-specific arteritis (exanthemata, typhus, typhoid, pneumonia)
 - (4) Non-specific arteritis (chronic toxæmia, ergotism)
 - (5) Endarteritis obliterans (cause undetermined)
 - c. Degenerative changes
 - (1) Arteriosclerosis (senile, diabetic and Moenchberg)

The author cites some of the procedures and devices used in the modern study of peripheral vascular diseases and presents the outlines that are used for the critical study of patients in the Vascular Disease Clinic of the Cincinnati General Hospital. This critical manner of studying peripheral vascular disease has tremendously broadened the conception of the problem. Cases are now better classified, the degree of vascular deficiency is more accurately estimated, the rôle of vasospasm is determined and earlier diagnoses are being made. Most important of all is the realization that in many thousands of persons who are working the margin of safety is narrow because of absence of palpable pulsation in the arteries of their feet, and that in many persons who are being treated for such conditions as fallen arches and metatarsalgia the pain is due to insufficiency of the blood supply to meet the demands of the tissues for oxygen. Frequent observations reveal that the most critical period in the course of peripheral vascular diseases is when the main arteries become finally occluded. If the occlusion is gradual the patient may not experience any discomfort. If it is rather sudden actual or threatening gangrene may follow. In such cases an element of spasm is added to the rather abrupt demand thrown upon the collateral circulation.

In tracing the evolution of the therapy of peripheral vascular diseases the author calls attention to the rapid progress made during the last decade. With the ability to measure the degree of vasospasm, the indications for removing it are becoming rapidly more definite. In Raynaud's disease and other purely vasospastic conditions excellent results are being reported following the removal of the cervico-thoracic and lumbar sympathetic ganglia. When vasospasm plays a considerable part in the obliterative vascular conditions sympathetic ganglionectomy appears to be definitely indicated. Among the conspicuous examples of the development of the surgery of the sympathetic nervous system are (1) the procedure of Leriche in which segments of vessels suddenly occluded by thrombus or embolus are excised to relieve the resulting severe vasospasm (2) excision of the sympathetic nerves preliminary to ligation of large arteries to assist in establishing a collateral circulation and prevent gangrene and (3) the excision of chronically occluded arteries advocated by Lewis and Leriche.

In the treatment of obliterative peripheral vascular diseases the surgeon must determine what may be done to help the development of a collateral circulation, and what may be done to hasten healing and lessen the dangers of amputation during the active and progressive stages of the disease. To these ends a large number of therapeutic procedures have been devised, and with the exception of arteriovenous anastomosis all of these procedures are still used in different clinics of the world. The author discusses the harmful effects that may come from a long period of elevation of an extremity. He believes that this therapeutic measure has been responsible for many amputations.

While the conservative and curative treatment of Buerger's disease has become rapidly adopted, the radical procedure of amputation has largely remained the procedure of choice in arteriosclerosis. In the author's clinic just as conservative an attitude has been adopted, with treatment of the arteriosclerotic type as vigorous as that of any other type of peripheral vascular disease. Every possible effort is made to tide arteriosclerotic patients through critical periods of pain, rest or threatened gangrene and infection in the belief that they will in time establish a circulatory balance that may be just as adequate as when slow gradual occlusion of the vessels takes place. Supplementing other forms of therapy the author uses a negative environmental pressure created by a machine which runs automatically for any length of time desired and is capable of producing any strength of alternating negative and positive environmental pressure as frequently as thirty times to the minute. Ordinarily a negative pressure of 80 mm. Hg. and a positive pressure of 20 mm. Hg. are used, the average rate of alternation being approximately one complete cycle in thirty seconds. The average duration of one treatment is twenty minutes. Since August 1932 sixty-nine patients with organic obliterative arterial dis-

ease have received regular and intensive treatment. Forty-seven of these patients had a high degree of peripheral senile arteriosclerosis without evidence of gangrene. The clinical diagnosis in all cases was confirmed by complete vascular and vasomotor relaxation studies under controlled conditions of temperature and humidity. A careful analysis of the results obtained reveals that in all the patients who had received intensive treatment for two weeks or longer there was a definite increase in the surface temperature of the extremities when they were observed under controlled conditions of temperature and humidity. Sixty-two of the patients stated that most of their pain ceased after about twenty-five treatments of twenty minutes each carried over a period of about two weeks. These passive vascular exercises are an extremely valuable adjunct to the treatment as a whole which involves paying attention to many details and the use of many therapeutic measures. The author observes that the passive vascular exercise has been much the most effective single stimulant to the development of a collateral circulation. In the critical periods of the peripheral vascular disease in which there is a rapid or sudden threat of gangrene it has certainly been responsible for the saving of many limbs which otherwise would have required amputation.

HENRY F. THURMOND, M.D.

STARR, J. Jr.: On the Use of Heat Desiccation, and Oxygen in the Local Treatment of Advanced Peripheral Vascular Disease. *Am J M Sc* 934, Decr., 1930.

When peripheral vascular disease develops gradually organic occlusion of a vessel is often compensated by the development of a collateral circulation and canalization of the occluded lumen. In some cases the circulation to an extremity may be diminished suddenly as by thrombosis in a previously diseased main artery with a resulting critical period of acute ischemia accompanied by pain, indolent ulcers, or gangrene. The aim of conservative treatment is to keep the part alive or to limit the area of gangrene as much as possible until collateral circulation is established.

Uncontrolled heat applied in the usual manner to the feet of a person afflicted with advanced peripheral vascular disease may sometimes relieve pain, but often intensifies it. In studies made in the cases of eleven patients with advanced peripheral vascular disease the environmental temperature which gave most relief of pain was found to be between 33 and 35 degrees C. To maintain this temperature evenly a thermo-regulated cradle was used. The author describes this device and presents evidence of its effectiveness in the relief of pain and the promotion of healing.

To determine the effect of the local application of oxygen the feet of seven patients showing gangrene or lesions were tested. The foot was placed in a jar equipped with a rubber cuff to make an air-tight joint about the leg. It was found that a concen-

tration of oxygen above 80 per cent caused relief of pain and a slowly developing change of color. The relief of the pain suggests that lack of oxygen is a factor in the pain occurring in gangrenous conditions. Experience with the application of oxygen together with controlled heat has been insufficient to justify advocacy of the routine use of this measure in the treatment of peripheral vascular disease. To date, it has been employed in only very severe cases in which relief of pain was the only definite result.

When oxygen was applied locally it was found necessary to prevent the undue accumulation of moisture within the gas-tight cover. Granular calcium chloride was used for this purpose. It soon appeared that the desiccation thus obtained was alone of distinct advantage in preventing the development of wet gangrene. As it also converted a wet into a dry gangrene, the assumption seems warranted that it will prevent infection of necrotic areas. However it did not prevent infection in the line of demarcation where the gangrenous part began to separate.

In the opinion of the author the procedures discussed will be found of value to supplement well recognized methods of treatment and may bring about recovery in some cases in which otherwise amputation would be required. In more severe cases they may permit the continuance of conservative measures for a longer time without too much discomfort or danger. **HERBERT F. THURSTON M.D.**

Macalaigne and Nicoud: The Lesions of Chronic Periarthritis Nodosa. Kussmaul's Disease (Lesions de la périarthrite noueuse à forme chronique maladie de Kussmaul) Ann. d'anal. path., 1934 xi 335

The chronic form of periarthritis nodosa is rare. Most of the cases have been reported from German and American sources. It is characterized by irregular fever, profound anæmia, polyneuritis, myositis and crops of nodules in the skin. The nodules evolve in a constant manner. At first subcutaneous they subsequently involve the epidermis, ulcerate, and crûscate. The diagnosis, when made before autopsy, is dependent upon biopsy of the nodules. Repeated remissions and exacerbations of the condition occur over a period of months or years.

The arterial lesions as seen at biopsy are characteristic. Early there is a dense infiltration of the adventitia with lymphocytes and polymorphonuclear leucocytes. Later the infiltration becomes entirely lymphocytic and less abundant and the thickened adventitia becomes fibrous. The media is involved at the same time and shows thick, concentrically arranged laminae of fibrous tissue. The muscle fibers are widely separated and are interrupted at many points. Thickening of the intima is usual, but complete obliteration is rare. The obliteration of the lumen of the vessel is due to a terminal thrombosis.

In association with the nodules there are diffuse and pericapillary lymphocytic infiltrations of the corium. The capillaries show proliferation of the endothelium. There are disseminated areas of necro-

sis which involve first the connective tissue and later the epidermis. The latter ulcerates and the necrotic foci are evacuated.

The arterial lesions are widespread, but do not involve the lungs or the central nervous system. In farcta and intestinal ulcerations secondary to the arteritis are frequent.

The authors' case was of ten years' duration and offered an opportunity to study the etiology. Inoculations of material from the nodules into guinea pigs and rhesus monkeys gave negative results. It is suggested that an animal known to suffer from periarthritis nodosa must be employed. In 1906 Luepke described the disease in the elk. Joest has seen it in the pig and in 1915 Guldner reported its occurrence in the calf. **ALBERT F. DEGROOT M.D.**

Liedberg N. Investigations Regarding the Plantar Skin Temperature Determined by Ipsen's Method in Deep Thromboses (Untersuchungen ueber die Haut Filtemperatur nach Ipsen bei tiefen Thrombosen) Acta chirurg. Scand. 1934 lxxv 229

On the basis of twelve cases of deep thrombosis in which the plantar skin temperature was determined by Ipsen's method, the author maintains that Ipsen's sign of thrombosis—an average day temperature of the planta pedis more than 1 degree higher on the affected side than on the other side—is not constant in all cases of deep thrombosis. In three of the twelve cases reviewed this sign was absent. Moreover in cases in which it is present it is by no means always an early sign. According to Ipsen, it can always be ascertained within the first twenty-four hours after a clinical diagnosis of thrombosis, but according to the author's findings it often does not appear until late in the course of the thrombosis. In one of the cases reported by the author it was noted first on the sixth day. However as in two cases it was found before any clinical signs of thrombosis could be recognized, some importance must be ascribed to it in the diagnosis of latent thrombosis. In some cases and in cases with a positive result, the test may yield diagnostic evidence when the clinical diagnosis of thrombosis is uncertain.

Vanÿsek, R.: Multiple Venous Thromboses (Multiple Venenthrombosen) Cas lek. Lerk. 1933 p. 1647

Multiple venous thrombosis or thrombophlebitis migrans is not a clinical entity, but occurs in various forms. In the superficial veins it may assume a benign form without a tendency to spread centrally. In this form the general condition is not much disturbed, the temperature is not raised and recovery results within a few days. In some cases the condition assumes the characteristics of sepsis. This occurred in the case reported by Catsaras and Symeloides, in which the thrombosis had its origin in a pneumococcus empyema and ended fatally. The same type of thrombosis has been found also in cases of carcinoma of the pancreas.

The author reports a case of multiple venous thrombosis in a forty year-old teacher in whom carcinoma of the stomach was demonstrated at autopsy. Multiple venous thrombosis has been found also in association with carcinoma of the bronchi. It may be said in general that it occurs in septic and cancerous conditions. However as both of the latter are relatively common and multiple venous thrombosis is quite rare, a third factor must enter into its development. This factor has not been discovered up to the present time. HALL (Z)

BLOOD TRANSFUSION

Stetson R. P. Forkner C. E. Chew W. B., and Rich M. L.: The Negative Effect of Prolonged Administration of Ovarian Substances in Hemophilia. *J Am M Soc* 1934, cli, 123

The first report of the use of ovarian extract in hemophilia was made by Grant in 1904. Following a review of the literature on this treatment from 1904 to date, the authors report their results from ovarian therapy in seven cases of hemophilia. Large amounts of ovarian substance of various types, such as thecol, theelin, and desiccated and extracted forms of ovarian products, were used. One or another of the eight preparations was given by mouth, subcutaneously or intramuscularly over periods of from twenty-eight to eighty-one days.

In no instance was the coagulation time of the venous blood found to be reduced by the treatment. Therefore no clinical improvement was observed which could be attributed to the ovarian therapy. Estrogenic substance was demonstrated in the urine both during the periods of ovarian therapy and during control periods. No correlation could be established between the quantity of estrogenic substance excreted in the urine and the fluctuations in the coagulation time of the blood.

A. F. LANE, M.D.

Rydén, Å.: A Contribution on the Question of Essential Thrombopenia and Its Treatment (Beitrag zur Frage der essentiellen Thrombopenie und ihrer Behandlung). *Acta Chirurg Scand* 1934, lxxiv, 83.

The author reports eleven cases of essential thrombopenia, in five of which operation was done, and discusses the symptoms, diagnosis, and treatment of the condition.

The diagnosis is often made without difficulty. Spontaneous hemorrhages occur from the mucous membranes or in the skin, the blood often coagulates *in loco* and the number of thrombocytes is reduced. The condition is frequently chronic and recurrent. One of its features is spontaneous remissions which must be reckoned with in the consideration of the treatment.

The most important conservative method of treatment is blood transfusion. This may favor a remission and is sometimes of decisive importance in the final outcome.

The best therapeutic measure is splenectomy. According to statistics—which are probably too favorable—the primary mortality is 9 per cent. Splenectomy is to be regarded, not as a true causal treatment, but rather as a powerful palliative procedure. In the great majority of cases it is beneficial, but in a certain number it is followed by recurrences or only incomplete improvement.

Recurrences or other complications after splenectomy generally develop early in convalescence and nearly always during the first year after the operation. Therefore it appears that by examination at the end of a year it would be possible to give a fairly reliable prognosis.

Faerman, I.: Surgery of the Haematopoietic System (Ueber Chirurgie des Bluthetungsystems). *Klin Med* 1933, 2, 18.

The author urges as close cooperation as possible between the surgeon and the hematologist. He advises greater foresight on the part of surgeons who remove the spleen merely because it is enlarged. He states that morphological changes in the spleen lead to alterations in function of the spleen and cause parallel changes in other organs.

Two main syndromes are recognized in the various splenomegalias, the myelosplenic and the hepatosplenic. The myelosplenic syndrome is characterized by non-regenerative anemia, enlargement of the liver without carbotic changes, and quick restoration of health and disappearance of the ascites after splenectomy. The hepatosplenic syndrome is characterized by absence of blood changes, the occurrence of marked regeneration of the bone marrow, atrophic carbons, and ascites, failure of splenectomy to give relief and a high mortality soon after the operation. In the diagnosis of these forms a careful study of the peripheral blood, bone-marrow picture, and splenic puncture are of great value. The nature of the Gaucher type of splenomegaly is unknown, and the diagnosis of this condition is difficult.

In the hemorrhagic diathesis (hemophilia) the deficiency of thrombokinase may be corrected by blood transfusion. In thrombopenia, splenectomy is indicated when the liver is enlarged or there is an increase in the hemorrhage when there is no chromoblasts or the megakaryocytes are changed, the temperature is normal, the anemia is of the pseudo-non-regenerative type, and the course of the disease is slow and favorable. In the other acute cases with septic manifestations and severe non-regenerative anemia splenectomy is not indicated. From the surgical standpoint only blood transfusion is to be recommended. In hemolytic icterus, splenectomy is indicated in cases of the congenital type (Minkowsky's splenomegaly) but in the acquired forms (Hayem's hypoplastic type) operation is contra-indicated. Of the numerous operations for pernicious anemia, splenectomy gives the best results. However it has recently been replaced largely by liver therapy. In the splenic form of leukemia splenectomy is permissible only after preliminary renal

gen irradiation, which considerably simplifies the operation and decreases the danger of hemorrhage by reducing the size of the spleen. In the myelogenous form of leukemia splenectomy should be replaced by conservative methods. A. SZABO (Z)

LYMPH GLANDS AND LYMPHATIC VESSELS

Teneff S. and Stoppani F: Observations on Lymphography (*Osservazioni sulla linfografia*) *Radiol med* 1934, xxi 235

This article begins with a review of the use of various substances such as compounds of mercury, silver and iodine for the roentgen visualization of the lymphatic system. Of all the substances so far employed, colloidal thorium in suspension seems best for use in the living subject. It gives good radio-opacity, it is absorbed almost exclusively by the lymphatics, and it is non toxic.

By means of thorium suspensions and cinnabar the authors carried out experimental investigations on living and dead guinea pigs, rabbits, and dogs. The opaque medium was injected directly into a lymph-drainage area or a lymph node. By this pro-

cedure excellent roentgenograms of the lymph vessels and nodes in the extremities were obtained.

The results in the living animals were less satisfactory than those in the cadavers. In the living animals the diffusion of the opaque medium through the lymphatics occurred much less readily than in the cadavers. This is probably explained by an active defense mechanism in the lymphatic system during life.

The authors carried out also extensive histological studies of the distribution and behavior of colloidal thorium in lymph nodes. In the animals in which the popliteal and inguinal nodes were removed the lymphatic circulation was re-established rapidly by collateral or anastomotic channels.

The authors believe that the described method of study may yield important information regarding the spread of infections and malignant disease in the body and the defense mechanisms against this spread enable us to introduce substances toxic for tumors directly into the neoplasms or increase the radiosensitivity of tumors and increase our knowledge of diseases of the lymphatic system.

EUGENE T. LEBBY M D

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

Ducuing: The Extirpation of Cancerous Lymph Nodes of the Groin (Sur l'extirpation des adénopathies cancéreuses de la région de l'aîne) *Rev de chir* Par 1934 lin, 157

Dissection of the groin for metastatic inguinal adenopathy is an essential part of the surgical treatment of carcinomas of the penis, vulva, or skin of the lower extremities. The author advises against inguinal evulsion in cases of neurocarcinomata because at the stage of regional lymphatic involvement these lesions are already generalized. He does not operate in the absence of palpable nodes. If the lymph nodes are movable, and occasionally when they are fixed, inguinal dissection is indicated. The extirpation should be total and bilateral, and should consist of block dissection of the cellular tissue, lymphatics, and aponeurosis.

The operation is done under local or spinal anesthesia. A long vertical incision is usually employed and the skin flaps, with minimal fatty tissue, are dissected toward either side. A triangular fascial incision is made from the anterosuperior iliac spine to the middle of the pubis and down to a point a finger breadth below the apex of Scarpa's triangle. This exposes the aponeurosis of the external oblique above, the fibers of the sartorius externally and the adductor longus on the inner side. The subcutaneous vessels are ligated and the three sides of the flap are dissected toward the center, together with the contained fat and lymphatics. The long saphenous vein is divided at the apex of the triangle. The under surface of the flap is then freed from the subjacent femoral vessels in Scarpa's triangle by dividing the branches close to the vessel trunks. A pedicle extending into the femoral canal is then liberated without, however dividing Poupert's ligament. This permits removal, in a single block, of all the lymphatics and lymph-bearing tissues of the groin. Caution is necessary to prevent hemorrhage from injury to the femoral vein. The secondary complications include hematoma formation, lymphorrhea, and gangrene of the skin flaps. A late sequel is edema of the extremities, which the author ascribes to venous as well as lymphatic obstruction.

LEO M. ZUCKERMAN, M.D.

Chabanier C. and Lobo-Onell C.: Chloroemia and the Postoperative Toxic Syndrome (Chlorémie et syndrome toxique post-opératoire) *Presse méd* Par 1934, 231, 25

In postoperative toxic conditions there is frequently though not always, a hypochloremia. The hypochloremia and the toxic symptoms are due to a

common cause. Incompletely catabolized protein substances set free from normal or inflamed tissues by the operation decrease the chlorine in the blood by attracting blood salt toward the injured area. When the chlorine content of the blood was abnormally high before the operation it may still be high after the operation, a fact which explains why hypochloremia is not always present in postoperative toxic conditions. As a rule however there is an absolute hypochloremia. In some cases the salt taken from the blood is sufficient to neutralize the toxic substances set free at the site of operation. Under such circumstances toxic symptoms do not occur. The passage of the toxic substances into the circulation is manifested by an increase in the non-urea nitrogen and polypeptids in the plasma.

Rechlorination by the intravenous administration of salt solution furnishes the chlorine necessary to neutralize the toxic substances, thereby relieving the toxic symptoms and decreasing the non-urea nitrogen of the plasma.

The fact that treatment with glucose and insulin is effective in these toxic syndromes has been cited in support of the theory that the syndromes are caused by ketons. The author holds that the glucose and insulin treatment is less effective than the salt treatment, and may act in somewhat the same way as the latter by attracting water and salt to the tissues.

ANDREW GOSWAMY, M.D.

Bottin, J.: Postoperative Pulmonary Complications. A Statistical Study of Pulmonary Complications After Abdominal Operations at the Surgical Clinic of the University of Liège (Les complications pulmonaires post-opératoires. Etude statistique des complications pulmonaires après les opérations sur l'abdomen à la clinique chirurgicale de l'Université de Liège) *Rev. de chir* Par 1934, lin, 5

From a review of the recent literature on pulmonary complications following abdominal operations and 973 cases of such complications, the author draws the following conclusions:

1. Postoperative pulmonary complications are more frequent in males than in females.
2. They are most serious after operations on the upper abdomen.
3. The type of anesthetic employed is of little importance in their development.
4. The time at which the operation is performed is not decisive, although the complications appear to be more frequent at certain times than at others.
5. While age has little influence on the incidence of postoperative pulmonary complications, the gravity of the complications seems to increase with age.

6 Other factors being equal, the individuality of the surgeon plays a definite part

7 The condition of the lungs before operation has a very definite bearing on the incidence and gravity of postoperative pulmonary complications and is of more importance than the pre-operative condition of the heart **MAURICE W. POOL, M.D.**

ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Vernart B. A. G.: The Law of Aseptic Healing of Wounds (*Das Gesetz des aseptischen Wundverlaufs*) *Monatsschr. f. Unfallheilk.* 1934 24, 69

Fresh traumatic wounds will heal by primary union like operative wounds if they are treated with benzene, hydrogen peroxide, and alcohol followed by thorough treatment with iodine. The author disapproves of systematic wound excision. The experiments of Schimmelbusch are not decisive as Schimmelbusch worked with cultures.

In 217 traumatic wounds studied by the author with Drenck before and after disinfection contamination with from 10,000 to 100,000 bacteria was present in only 10 per cent and after chemical antiseptics with a 5 per cent tincture of iodine only a few of the bacteria remained alive. When 10,000 spores of anthrax bacilli were suspended in 1 c cm of fresh human blood kept fluid in sterile glass ampoules and 0.2 c cm of a 5 per cent tincture of iodine was added no colonies remained after ten minutes, whereas this was not the case when Dakin's solution was used. Tincture of iodine kills even the spores of tetanus and gas gangrene bacilli.

Of the thousands of wounds treated by the author with iodine, 99 per cent healed by primary union. In 24 cases of compound diaphyseal fractures, 42 of compound fractures of the hand and foot and 400 of wounds of the fingers and toes, there were no deaths from sepsis. Amputation was done in only 1 case and in this instance was necessitated by tearing of the popliteal artery.

The author accepts the conclusions of Ehalt

FRANZ (Z)

Latimer E. O.: The Treatment of Decubitus with Tannic Acid. *J. Am. Med. Ass.* 1934 44, 51

The most common locations of decubitus are the soft tissues over bony prominences, but with the widespread use of casts, splints, and skin traction few parts of the body surface are exempt. Prophylaxis is the ideal procedure. Such measures as frequent changing of the patient's position, massage, the use of dusting powders, and protection of susceptible parts are of the utmost importance. The author emphasizes the necessity of proper fitting of casts and splints and the careful application of skin traction. Not infrequently decubitus develops in spite of prophylactic measures.

The use of tannic acid in the treatment of decubitus was suggested by the gross similarity of decubitus to certain burns.

In the author's cases treatment with a fresh 5 per cent aqueous solution of tannic acid is begun at the first sign of tissue disturbance preferably before the skin is broken. The wound and surrounding skin are cleansed and, if necessary the wound is debrided. Lesions that may be kept exposed to the air are sprayed with the tannic acid solution every hour until a heavy coagulum is formed. Wounds that must be covered to keep them clean or to prevent direct pressure are covered with sterile gauze which is kept saturated with the solution.

The presence of infection is not necessarily a contra indication to tannic acid treatment. In cases with infection the wound is first treated with a suitable antiseptic until the infection is controlled. If infection occurs after treatment with tannic acid has been begun, the coagulum is removed, the wound treated with an antiseptic, and the tannic acid reapplied after the infection has been controlled.

A virulent infection, profound necrosis of tissue, and bone involvement are contra indications to the method.

De Puaz, J.: The Clinical Importance, and the Relation to Accident Compensation, of Chemically Induced Tissue Injuries, Especially Necroses Produced by Indelible Pencils (*Ueber chemisch bedingte Gewebeschädigungen, speziell Tintenstiftnekrosen in ihrer klinischen und unfallmedizinischen Bedeutung*) *Schweiz. med. Wochenschr.* 1933 11, 1174.

Indelible pencils are made of aniline dye substances belonging to the triphenylmethane and diphenylamine group. The former include gentian violet, fuchsin, auramin-pyoktannin aureum and methyl violet-pyoktannin caeruleum. The last-named is the most dangerous. The diphenylamine group include methylene blue. With increased alkalinity the in-junousness is increased. The author cites the investigations of Erdheim, Ettore, Glass, Grudeco, Irtzer, Braun, and Ken. The variability of the injuries produced depends upon the chemically quantitative variation of the introduced dye substance. The reaction is severe and rapid. Around the foreign substance is formed a cyst with colored contents. The dye causes a monocolored inflammatory edema which spreads and produces necroses sparing no tissue not even cartilage or bone. The clinical picture has been produced experimentally in animals, but the reaction varied with the species. Constitutional symptoms also occurred in the animals.

To the sixty-seven cases reported in the literature the author adds thirty three from the Swiss Accident Insurance Reports. He cites a case in which the patient introduced a 14-cm indelible pencil into the urethra. The pencil was extracted through a perineal incision. In spite of its removal severe hemorrhages occurred from a urethral vessel. In twenty cases, constitutional symptoms occurred—malaise, headaches, general weakness, and gastric catarrh.

Glass called attention to the fact that severe constitutional injuries result when the patient comes for

treatment late or is not operated upon radically. At first the injuries appear insignificant, but after a few hours inflammatory reactions set in to be followed by necrosis later. Therefore immediate surgical treatment should be given. The wound should be opened widely and if possible excision should be done. If excision is impossible, the treatment should consist of excoriation of the colored tissue and thorough irrigation. Wet dressings should be applied. The author warns against attempts to remove the pencil with pincers as it is dangerous.

Of the cases reviewed the average time of healing was thirty-one days in those treated radically and forty-five days in those treated conservatively. Eye injuries may lead to corneal opacities. Dye dust in the eye should be washed out immediately, and pieces of dye in the cornea and conjunctiva should be excised. FRANZ (Z)

Gordon D. Disability Due to Swelling Following Trauma of the Extremities. Post Traumatic Periarthral Fibrosis. *Am Surg* 1934, 1, 117, 633

In the case of the hand, the clinical history of the condition described is as follows:

The patient is treated for an injury or infection of the fingers, hand, wrist, or forearm. The hand becomes swollen. The swelling is greatly increased by constricting dressings. If all dressings are removed and the hand is placed in a dependent position, as in a warm bath, the position alone causes swelling provided it is maintained without periods of elevation. A forearm in splints loosely applied for a fracture unless held elevated, develops swelling in direct proportion to the degree of the proximal injury. The soft tissues of the fingers become distended with fluid which fixes the interphalangeal joints. When the swelling has attained this degree, the fingers are held in a slightly flexed position of repose, the joint wrinkles and palmar creases disappear and the skin becomes pale and slightly cyanotic. The edema is a relatively soft and pitting edema and can be massaged out to a considerable degree.

If this condition is allowed to continue for a period of two weeks or more, the tissues about the joints become more prominent, active movement occurs in the metacarpophalangeal rather than the interphalangeal joints and a fist cannot even be started. The distal joints lose their function before the proximal joints. The less the movement possible, the greater the pain on activation until fixation. There is no gain or crepitus in the tendons, and limitation of motion is apparently due largely to a periarthral productive process which is slightly tender on firm pressure.

As the most common edemas do not produce the condition described, the author suggests that in an edema of the distal part of a limb secondary to trauma something is activated which produces a disturbance in cellular activity in the distal tissues dependent upon lymph stasis and circulatory changes,

which ultimately causes a fibrosis at a point of meager vascularity about the joints. The prevention of lymph stasis and circulatory changes by elevation above the heart level and by massage will prevent this causative factor. GEORGE A. COLLETT, M.D.

Bachmann, W.: Two Cases of Rosenbach's Disease (Deux cas de maladie de Rosenbach). *Schweiz med Wochenschr* 1934, 1, 35

Rosenbach's disease, erysipelas of swine, seems to occur in human beings more often than is generally supposed. The diagnosis is easily made if the condition is borne in mind.

The cases reported by the author were those of butchers who contracted the disease in killing hogs. In the first case, the more severe one, the injection of serum was necessary in addition to local treatment with ichthyol salve. In the second case local treatment alone resulted in cure. The erysipelas bacillus, normally an inhabitant of the intestinal tract of even healthy hogs, usually causes only local inflammation in man, but occasionally produces a general infection.

The diagnosis is made easily. As a rule the infection involves the fingers and edges of the hand.

In most cases local treatment is sufficient. Many physicians fear the severe general reaction following serum injections. The author sees no objection to the injection of serum in cases of progressive infection provided consideration is given to the danger of anaphylactic shock if tetanus injections have been given previously. The infection is to be regarded as an occupational disease. DROSS (Z)

Taylor, F. W.: The Treatment of Acute Tetanus. *J Am M Ass* 1934, 41, 595

The author cites statistics from various sources which indicate that the only constant variation in the mortality of acute tetanus is found in a comparison of cases with long and short incubation periods. The mortality was 81 per cent when the incubation period was less than five days, 83 per cent when it was from five to ten days, 57 per cent when it was from ten to fourteen days, and 25 per cent when it was from fourteen to twenty-one days. Regardless of the route of administration or the amount given, tetanus antitoxin has been strangely ineffective in bringing about a marked decrease in the mortality.

In attempting to determine the reason for this, the author analyzed a series of cases admitted to the Indianapolis City Hospital and the Indiana University Hospital in the period from 1927 to 1933. He found that deaths were due to exhaustion, spasm of the glottis, and convulsion, and not to the neurological lesion produced by the tetanus toxin.

In discussing the local lesion Taylor emphasizes the importance of directing considerable attention to its treatment and cites cases in which foreign bodies were found in innocent-appearing or "healed" lesions. In each case exploration of the wound disclosed a small foreign body surrounded by necrotic tissue or pus containing the tetanus organism. These

cases are cited to emphasize the importance of the local wound and to refute the dictum that if the wound is healed it should not be disturbed. Tetanus is caused and continued by the local focus. Therefore the local lesion should receive primary consideration as a surgical emergency in the operating room. The author agrees with Tulloch who advocates complete excision of the focus without entering infected tissue.

In discussing the general care of the patient, Taylor recommends the administration of sodium amytal to induce light narcosis and its administration at regular intervals to keep the patient quiet and relaxed. Particular care must be taken to keep the fluid intake at a high level and maintain proper elimination.

The author believes it is unnecessary to administer the huge quantities of tetanus antitoxin used at present. He recommends that from 30 000 to 60 000 units be given when the patient is first seen. This may be repeated if the condition is prolonged. The intramuscular route of injection is perhaps the most satisfactory.

JOHN H. GARLOCK, M.D.

Pazzagli, R. and Zambelli R.: The Relation Between Traumatic Contusions and Staphylococcus and Pyocyanus Infections (Rapporto fra traumati contusivi ed infezioni da stafilococco e da piociano) *Pelidni* Rome, 1934, xli sez. chir. 28

The authors emphasize the importance of trauma as a predisposing cause of infection especially from the standpoint of industry and compensation insurance. When, following trauma, a local or general infectious process manifests itself there are two possible explanations for the septic process: either the organisms were already present in the body or else the trauma opened a path for their entrance from without. In cases in which organisms were already present in the body there are three possibilities:

1. The trauma may have struck an organ already the site of an infectious process.
2. The micro-organisms at the site of trauma may have been in a state of latency.
3. The trauma may have created a point of lowered resistance which bacteria reached by way of the circulation and then grow there by virtue of a new balance established as a result of the trauma.

The authors cite numerous illustrative cases. In an experimental study of the relation of trauma to infection which the authors carried out on rabbits a subcutaneous injection of 1 cc. of a suspension of staphylococcus albus, staphylococcus aureus, and bacillus pyocyanus alone and combined was made on the inner side of the thigh. A weight of 1 kgm. was then dropped from a height of 25 cm. over the site of injection. After varying periods of time the animals were sacrificed and microscopic studies were made at the site of the trauma.

The findings led the authors to conclude that a trauma even if it does not produce external manifestations influences the growth and progress of an infection by increasing the pathogenic virulence and

the number of bacteria and preparing the culture medium for better growth of the organisms. They were unable to determine the influence of trauma on the period of incubation. JOHN H. GARLOCK, M.D.

Gmellin L.: The Importance of Slight Tissue Injuries for Metastases in Bacteriemia (Die Bedeutung geringfügiger Gewebsverletzungen fuer die Metastasenbildung bei Bakteriemia) *Deutsche med. Wochenschr.*, 1933, li 1788

In five cases of streptococcal bacteriemia, metastases developed at sites of puncture, one of which was in the pleura, after the subsidence of a pneumococcal empyema. The most impressive case was that of a man who seven days after the withdrawal of a blood specimen developed a sore throat which was followed two days later by a streptococcal abscess and venous thrombosis at the site of puncture. Whereas the natural defense of healthy tissue protects it from suppurative metastasis even in the severe bacteriemias of septic diseases, a slight tissue injury such as a simple venepuncture may sufficiently lower the local resistance to favor the occurrence of metastasis. However, this rare complication can have no effect on our therapeutic decisions.

STEVENS (Z)

Foshay L.: Tularemia Treated by a New Specific Antiserum *Am. J. M. Sc.* 1934, clxxvii 335

As the incidence of diagnosed cases of tularemia is increasing the advent of a specific treatment is important. Although the disease has a mortality of about 5 per cent its average duration is long and its victims are incapacitated for many months. This initial report on the therapeutic trial in fifteen cases of tularemia of a new specific antiserum prepared from a vaccinated goat is quite encouraging. In fourteen of the fifteen patients treated there was prompt amelioration of the symptoms, and the duration of the adenopathy, the period of disability and the total duration of the disease were shortened. The one patient who was not benefited came for treatment in a moribund condition.

In every instance the infection resulted from contact with wild rabbits and the diagnosis was confirmed by an agglutination or an intradermal test or both. The beneficial effects of the treatment on the general symptoms and the local infection were noted within twenty-four hours after the intravenous administration of the serum. Painful ulcers and suppurating glands became less distressing and by the end of a week healing was well under way. The temperature fell promptly, the swelling of the lymph nodes became markedly reduced and the leucocyte count decreased. With few exceptions this is the general favorable trend of events, and it seems clear that the clinical course of tularemia is susceptible to favorable modification by specific therapy.

The results of intradermal tests showed that the therapeutic properties of the antiserum are closely associated with, if not dependent upon, a desensitization

thing action. The prompt and permanent beneficial effects are made possible by the rapid and complete induction of desensitization. In the cases reported the abrupt disappearance of the signs of the disease was, in fact, coincident with the establishment of desensitization.

MAURICE MYERS, M.D.

ANÆSTHESIA

Desplas, B. and Chevillon, G.: Sodium Butyl Ethyl Barbiturate Sodium Soneryl. Given Intravenously as a Basal Anesthetic (A propos du butyl-éthyl barbiturate de sodium, soneryl sodique, intraveineux comme anesthésique de base) *Bull. et mém. Soc. sci. méd. 1934*, LV 519.

Prompted by the recent literature on evipan sodium, the authors present a report on soneryl sodium which they believe is far superior to evipan sodium as it permits long operative procedures with minimal danger of overdosage, a large margin of safety, minimal lowering of the body temperature, and only moderate acceleration of the pulse rate. While it causes a decrease in the depth of respiration, this is easily overcome by the administration of carbon dioxide. The drop in the blood pressure of from 10 to 40 mm. Hg may be avoided by the use of ephedrin. No significant changes in renal or hepatic function have been noted.

In the usual technique, 0.3 gm. is given by mouth the evening before the operation. Half an hour before the operation 1 ctm. per kilogram of body weight is administered intravenously in a 5 per cent solution. For patients weighing more than 45 kgm. the dosage is 1.35 ctm. per kilogram. The solution is injected very slowly. The patient soon feels sleepy and anesthesia supervenes gradually. In most cases carbon dioxide is then administered to deepen the respiration. While for most of the longer operative procedures the soneryl sodium is supplemented with ether, the amount of ether used is one-half the amount usually required. In five cases, the soneryl sodium anesthesia was supplemented by regional anesthesia with excellent results.

Altogether soneryl sodium anesthesia has been used by the authors in eighty-seven cases, without untoward results. The operations included fifteen gynecological laparotomies, thirty-three gastric operations, seven operations on the biliary tract, and two colectomies. Contra-indications have not been found unless hypotension is considered to render this type of anesthesia inadvisable. No deaths and no complications attributable to soneryl sodium have been recorded. The anesthesia is of short duration, but the patient remains in a drowsy state for about forty-eight hours.

WILLIAM C. BECK, M.D.

Quarella, B.: My Method of Inducing Spinal Anesthesia with Percain (Ma méthode de raché-anesthésie à la percain) *Presse méd. Par.* 1934, XLII, 187.

The author describes his technique in the use of percain following a discussion of the disadvantages

of other spinal anesthetics. He states that because of the readiness with which the base precipitates in alkaline solutions a very careful technique is necessary.

A preliminary injection of an ampoule of freshly prepared scopolamin-morphine is given an hour before the operation. In the cases of young and vigorous subjects a dose of 1 c.cm. of 10 per cent mannite is given. A quarter of an hour before the operation 1 or 2 ampoules each containing 5 cgm. of ephedra are given. Quarella emphasizes the importance of the injection of scopolamin-morphine injection as some surgeons advise against the use of narcotics in spinal anesthesia. High spinal anesthesia always causes a marked fall in the blood pressure. This is the chief but practically the only danger of this method of inducing anesthesia. The scopolamin-morphine and the ephedrin prevent an excessive fall.

From 1.4 to 2 c.cm. of 1.200 percain are aspirated into a syringe. The spinal puncture is made with the patient seated and his back bent as in this position it is easier to avoid injuring the nerve roots than when the patient is lying down. The puncture is generally made between the twelfth thoracic and the first lumbar or between the first and second lumbar vertebrae for high anesthesia, and in the third or fourth lumbar intervertebral space for low anesthesia. From 5 to 10 c.cm. of spinal fluid are evacuated, depending on the level of the anesthesia desired. From 6 to 8 c.cm. of spinal fluid are aspirated into the syringe containing the anesthetic. As a rule 6 c.cm. are aspirated for 1.5 c.cm. of anesthetic and 8 c.cm. when 2 c.cm. of anesthetic are to be used for high anesthesia. The syringe is shaken or turned upside down to mix the fluids. The injection is made rather slowly in from ten to twelve seconds. For high anesthesia the aspiration and injection may be repeated a second time to make sure of a perfect anesthesia, but this is not necessary if the patient is weak. The patient is immediately laid on the table in a slightly inclined position with his head elevated by a pillow. As a rule he is inclined from 10 to 15 degrees for operations on the perineum or lower walls of the abdomen and from 20 to 35 degrees for operations on the abdominal viscera. The inclined position prevents the anemia of the brain and medulla resulting from dilatation of the abdominal vessels. It is best to wait at least fifteen minutes before beginning the operation. This gives time for the blood pressure to rise. If the operation is begun sooner the decrease in the pressure caused by opening the abdomen and traction on the viscera is added to that caused by the anesthetic and the results may be serious.

After the operation the patient is kept for twenty-four hours in a slightly inclined position. This is the best method of preventing postoperative headache.

The author has used the method described in about 1,500 cases and has never been obliged to supplement it with the use of a general anesthetic. Vomiting has never occurred, and nausea has been rare. When nausea occurred it was usually during

traction on the viscera. Headache seems to be less frequent than with the use of other spinal anesthetics. Percaine appears to be distinctly superior to other spinal anesthetics for abdominal operations.

Quarella compares his technique with that of Jones in which scopolamine and morphine are not given and spinal fluid is not aspirated into the anesthetic and points out the advantages of his method.

AUDREY GOSWAMI, M.D.

Houdard Judet and Mathey: Epidural Anesthesia of the Dorsal, Lumbar and Sacral Roots (Sur l'anesthésie épurale des racines dorsales, lombaires et sacrées) *Bull et mém Soc nat de chir* 1934 1x 510

The authors report their experiences with epidural anesthesia in twenty five cases. The operations included seven for hernia, nine for appendicitis, one for thoracic empyema and other major interventions. In all but one case, the anesthesia was satisfactory. In the one exception the solution was not injected into the epidural space. In two cases supplementary anesthesia was necessary because the amount of solution injected was insufficient. In a few anesthesia occurred immediately but as a rule it was first manifested after five minutes and reached its maximum intensity after twenty minutes.

The equipment necessary is simple. It consists of a lumbar puncture needle with an extremely short bevel, and a simple U shaped glass manometer connected to the hub of the needle by rubber tubing.

The patient is placed in lateral decubitus and the needle inserted slowly into the space between the spinous processes. Great care must be exercised in traversing the ligamentum flavum lest the pressure force the needle through the dura. When the needle enters the extradural space it pushes the dura ahead of it and thereby creates a space of negative pressure which is manifested by the reaction of the manometer. When the needle enters the subdural space the pressure is definitely positive. Before the anesthetic solution is injected an attempt should be made to aspirate spinal fluid or blood through the cannula. As the amount of the anesthetic employed is approximately six times that used in the induction of spinal subdural anesthesia it would be a grave error to inject it into the subdural space. If the latter has been opened it is advisable to give up this method for some other type of anesthesia.

The epidural space is not a space in the true sense of the word. It is the area occupied by the extradural venous plexus, and rather loose areolar tissue. It starts in the lumbar area where it attains a depth of almost 1 cm and diminishes gradually as it reaches the cervical area where the spinal dura becomes adherent to the periosteum.

In conclusion the authors warn against general adoption of this method of inducing anesthesia because it is extremely delicate and is capable of producing serious damage if it is employed improperly by persons without experience.

WILLIAM C. BECK, M.D.

WEBSTER expresses the opinion that the closer attention is paid to the r/min intensity (the time of the applied doses) accurate measurement of the irradiation absorbed at the depth of the tissue, and all the other factors of tissue, volume, or body dose the closer the biological effects of the long and the short wave-lengths approximate one another quantitatively. He cites experimental and clinical evidence in support of this belief.

ROSENBERG expresses the opinion that quality and quantity of irradiation are so intimately connected that failure to distinguish them has been responsible for much confusion of thought. He states that mainly because of the impossibility of eliminating secondary irradiation under therapeutic conditions, no satisfactory proof has yet been advanced in support of the view that different wave lengths have different effects or that different types of neoplasm respond to different wave lengths. He states that the chief consideration is the amount of irradiation

indicated, and this depends on clinical experience. Neoplasms vary enormously in their response to irradiation, and the response of radiosensitive neoplasms is directly proportional to the vigor with which the tumors are attacked. Since clinical and experimental data indicate that roentgen rays act lethally upon malignant cells, the aim should be to produce a maximum effect upon these cells with minimal damage to the normal cells.

ROSENBERG claims that absorption of the roentgen rays is necessary to produce a beneficial effect and therefore, at least in breast cancer irradiation of comparatively low kilovoltage has advantages over short wave therapy.

FOUR reports that his results have improved since he has used voltages of 200 kv and that experiments with voltages above this are promising. He considers adequate dosage essential not only for the growth itself but also for surrounding tissues where it is likely to spread.

ABRAHAM H. KATZ, M.D.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Wilson R. A. and Torrey M. A.: The Effects of Alpha Lobelin on Respiration. *Am J Surg* 1934 viii, 426

Alpha lobelin is obtained from lobelia inflata a herb belonging to the nicotine group. It was first recognized in 1913 by Cutler who employed it in the treatment of asthma. For many years lobelia inflata was used by the Indians as a substitute for tobacco. Its principal alkaloid is lobeline. In 1916 Weiland prepared a pure crystalline hydrochloric salt of this alkaloid. In addition to lobeline lobelia inflata contains four other alkaloids.

The authors report experimental work which they carried out on cats to determine whether the drug is a respiratory stimulant, to analyze the mechanical reaction to its use, to determine its toxicity and to isolate its locus of action. The cats weighed about 3 kgm. and were anesthetized with sodium amytal.

From their findings the authors conclude that alpha lobelin results in powerful respiratory stimulation in the anesthetized non-asphyxiated laboratory animal and has an almost immediate effect when it is administered intravenously. It acts primarily on the respiratory center. It does this by lowering the threshold of this center thereby increasing the ability of this center to respond to existing carbon dioxide tensions in the blood. Its action is comparatively transient. Prolonged stimulation cannot be obtained with a single dose. The most efficient action with maximum safety is obtained with a dose not exceeding 3/20 gr. This dose produces the greatest increase of ventilation. The margins of safety in its use are wide. The mechanical reaction is wholly desirable within certain limits. Cessation of respiration from an overdose is due not to paralysis or poisoning of the respiratory center, but to increased central sensitivity with over-stimulation of the center. Vomiting and other disturbances were not observed by the authors. The blood-pressure changes are not important except possibly in the presence of hemorrhage or pathological changes in the blood vessels.

MANUEL E. LICHTENSTEIN, M.D.

Hansman F. S. and Wilson F. H.: Calcium and Phosphorus Metabolism in Diseases of the Thyroparathyroid Apparatus. I. Calcium, Phosphorus, and Total Metabolism in Hyperthyroidism and the Part Played by the Parathyroid Glands. II. The Problem of the Mode of Action of Vitamin D. *Med J Australia* 1934, 4, 37-41.

The authors first discuss the work carried out by Aub and his associates at the Massachusetts General

Hospital Boston on the effect of hyperthyroidism on calcium and phosphorus metabolism. In several cases of hyperthyroidism Aub and his associates found that there was a marked loss of calcium and phosphorus from the body. They attributed this loss to a specific effect on bone of the excess of the circulating thyroid hormone by means of which calcium was mobilized and excreted predominantly in the feces. Hansman and Wilson are not convinced that this conclusion was warranted by the evidence presented. From a careful study of the calcium and phosphorus metabolism in seven patients suffering from hyperthyroidism they conclude that the excessive mobilization and excretion of calcium and phosphorus which occurs in certain cases of hyperthyroidism is due to an associated hyperparathyroidism. Two patients who were suffering from hyperthyroidism with an associated hypoparathyroidism were found to be in calcium and phosphorus equilibrium.

The authors believe that although hyperthyroidism is frequently accompanied by a negative calcium and phosphorus balance this is not invariably true. It is possible for calcium and phosphorus equilibrium or a positive calcium and phosphorus balance to be present. The authors are of the opinion that hyperthyroidism *per se* has no specific effect on calcium and phosphorus metabolism. They were unable to confirm the observation of Aub and of Hunter that the excretion of the mobilized calcium occurs chiefly in the feces.

In discussing the function of Vitamin D in the body and the interrelationship of Vitamin D and the parathyroid glands, Hansman and Wilson review the literature and refer specifically to the effect of Vitamin D on the calcium metabolism of normal and parathyroidectomized animals. In two patients suffering from hyperthyroidism with an associated hypoparathyroidism they studied the effects produced on calcium and phosphorus metabolism by the administration of irradiated ergosterol. When the ergosterol was administered in adequate amounts, it was found to produce a definite elevation in the serum calcium and a decrease in the concentration of serum phosphorus together with marked improvement in the general condition. During the period of ergosterol administration there occurred a considerable retention of both calcium and phosphorus. The authors conclude that the beneficial effect of Vitamin D in hypoparathyroidism is not due to better absorption of calcium from the intestinal tract, changes in the serum level of calcium inorganic phosphorus, or the CaX₂P product. They suggest that Vitamin D acts as a catalyst which renders calcium more available for tissue metabolism.

LISTER R. DRAGSTEDT, M.D.

Donati, M: Diabetes from the Surgical Point of View (Le problème du diabète au point de vue chirurgical). *Lyon chir* 1934, xxv, 133

After reviewing the precautions that should be taken at operation on patients with clinical or subclinical diabetes, the author discusses at length the surgical treatment of diabetes itself.

On the basis of experiments which showed that partial suprarenalectomy or denervation of the suprarenal glands increased the sugar tolerance of pancreatectomized animals, Donati performed a denervation of the left suprarenal of a man. The carbohydrate tolerance was markedly improved and for three years the patient enjoyed fair health even though dietary treatment was entirely neglected. The operation was done in 1929. Since then, other surgeons have performed unilateral and bilateral denervation with encouraging results. Hypertension is also influenced favorably by this procedure.

Celiac ganglionectomy, denervation of the liver ligation of the pancreatic duct or of a part of the pancreas, ligation of the parotid ducts, and partial parathyroidectomy are discussed with a review of the literature. The clinical value of these operations has not yet been determined definitely.

ALBERT F. DEGRANT, M.D.

Medison, F. W., and Squier, T. L. The Etiology of Primary Granulocytopenia (Agranulocytosis). *Am J Med Sci* 1934, cv, 755

Extensive search for an organism capable of producing the syndrome of primary granulocytopenia has met with little success. Kracke has been able to reproduce the clinical picture accurately in experimental animals by the use of benzene, ortho-cresol, zinc acid, and hydroquinone. Turley and Shoemaker have found that, in dogs, phenobarbital produces a marked reduction of the granulocytes. In the case of human beings, exposure to benzene may cause a marked depression of the bone marrow with an especially marked effect on the granulocytic centers, and primary granulocytopenia occasionally follows the administration of arsenphenamine. Kracke found that eight of nine patients with primary granulocytopenia seen by him had taken drugs of the coal-tar series prior to the onset of their illness.

While observing a patient with primary granulocytopenia the authors noted a sudden unfavorable change in the granulocyte level which had been showing a satisfactory response. The granulocytes decreased abruptly with a marked shift toward immaturity and the patient became more toxic. Investigation disclosed the fact that he had been given a sedative dose of a barbituric acid derivative the evening preceding the granulocyte decrease. It was later found that immediately preceding the onset of the illness he had taken alonal (allylpropylbarbituric acid) with amidopyrine and that for some time previously he had been in the habit of taking that drug frequently for restlessness and insomnia. Another patient suffering from acute cholecystitis with a normal leucocyte response of 12,000 white cells,

10,000 of which were granulocytes, had had no treatment except rest, a restricted diet, and two alkaline tablets each night for two weeks. At the end of that period she was found to have a typical picture of primary granulocytopenia with 1,500 white blood cells and complete absence of granulocytes in spite of recovery from the cholecystitis. In each of the fourteen cases reviewed there was a definite history of the taking of amidopyrine in combination with a barbiturate or amidopyrine alone. In one case the patient had taken amidopyrine in combination with other drugs immediately prior to the clinical discovery of the granulocytopenia. In the six cases in which amidopyrine alone or in combination with barbiturates was taken for the relief of pain or restlessness during or after the acute illness, the mortality was 100 per cent in spite of the fact that four of the patients recovered from the acute attack. In the eight other cases in which the use of these drugs was prohibited, there were only two deaths, a mortality of 25 per cent, and in each of the fatal cases the granulocytopenia was so extreme when the diagnosis was made that no bone marrow response to stimulation was obtained. In all of the other cases in the group the patients recovered from the acute attack and are well after an interval varying from two years to three months. Five of these patients have had no recurrence. One patient has had three mild recurrences, at least two of which are known to have followed the taking of amidopyrine.

The author believes that amidopyrine alone or in combination with a barbiturate is capable of producing primary granulocytopenia in individuals who have developed a sensitivity to the drug and that this condition is the result of an allergic or anaphylactic drug reaction. NORMAN G. PARKY, M.D.

Lazarus-Barlow, P., and Chamberlain, L. P. B.: The Value of Human Blood Serum in Septicemia. *Lancet*, 1934, cxviii, 503.

A method of treating cases of septicemia or sepsis by the combined use of antiserum and fresh human serum or antiserum and whole blood is described. Twelve cases in which the method was used are recorded. In ten there was improvement often marked, after the administration of the human serum, whereas in none was there improvement after the injection of antiserum. There were three deaths in the series. Whole blood should be at least as effective as human serum from the clinical point of view. The authors postulate a lack of complement in certain patients of the type treated.

As a streptococcal antiserum the polyvalent and antiacetabul antiserum were used in equal proportions on purely clinical grounds since blood cultures, when made, were negative. Fresh human serum was obtained by withdrawing approximately 50 c.c. of blood from the vein of a donor and centrifuging it as soon as clotting had occurred. The injection was made usually about half an hour after the withdrawal. In certain cases some of the serum was given intravenously—after it had been found

compatible with the patient's red cells—and the remainder intramuscularly. In other cases the whole amount was given intramuscularly. The intramuscular injection of antiserum was given first. If improvement was not manifested within twenty-four hours by a fall in the temperature and pulse rate, an injection of fresh human serum was given. If further antiserum was considered necessary it was almost always given alone, and the human serum was administered twenty-four hours later.

WALTER H. NADLER, M.D.

Bartach, G. H.: Lipophage Granuloma Formations, Especially of the Female Mammary Gland (Weber lipophage Granulombildungen im Besonderen der weiblichen Brustdrüse). *Arch. f. Klin. Chir.* 1933 *cxviii* 63.

Lipophage granulomata are granulation-tissue formations which may develop as sequelae of focal necroses of the subcutaneous fatty tissue. The fat thereby liberated and saponified acts as a foreign body which sets up inactive changes in the form of a foreign-body granuloma. The causes of the development of these tumors are most frequently traumatic, though not only mechanical but also chemical and physical influences come into play.

The author reports his observations in seven cases of lipophage granuloma. In four of these the female mammary gland was involved and in one case each the upper and lower arm. In another case, the cause was traumatic injury of a lipoma. In addition, the author cites a lipophage granuloma of the female mammary gland which was examined only clinically. In the literature to date there are recorded seventy-two lipophage granuloma formations of the mammary gland, of which only 5 involved the male mammary gland. The female mammary gland is more readily accessible to mechanical influences. Because of their clinical manifestations, lipophage granulomata are not infrequently regarded as true or malignant tumors and treated accordingly.

The majority of the tumors were found in women about fifty years of age. Clinically these neoplasms present themselves as coarse, hard, and often even fluctuating nodules of various sizes, single or multiple, which are painless and, although in intimate relationship with the subjacent and overlying tissues, generally movable. The related lymphatic glands may be enlarged and hard on account of resorptive inflammation. When it is impossible to make a correct diagnosis clinically, biopsy is indicated. The macroscopic findings are difficult to establish whereas the microscopic findings are definite.

Whether roentgen irradiation may cause lipophage granulomata is as yet uncertain, but the tumors have been observed to occur after diathermy and radium treatments.

Lipophage granulomata in sites other than the breasts are easily confused with sarcomata.

The name lipophage granuloma is better than the term lipogranulomatosis subcutanea."

ERICH HERRL (Z)

Butterworth T. and Klauder J. V. Malignant Melanomatoma Arising In Moles. A Report of Fifty Cases. *J. Am. M. Ass.* 1934, cli, 739.

The term 'melanoma' is applied to any abnormal collection of melanin pigmented cells wherever it is situated. Malignant melanomata include tumors of very different histological structure. The transition from a benign to a malignant melanoma may occur at any age. Malignant melanoma is essentially a disease of the white race. A relation of trauma to malignancy has not been proved.

A clinical diagnosis of malignant melanoma is justified by an increase in the size and pigmentation of a mole associated with bleeding. Late additional evidence of this condition is enlargement of the regional lymph glands. Histological examination is, of course, conclusive. Biopsy is a dangerous procedure unless the whole lesion is removed. Metastasis may occur to any organ.

The treatment of malignant melanoma is excision followed by high voltage roentgen therapy applied to the site of the tumor and to the regional lymphatics. General metastasis is usually reported to occur about three years after the first symptoms of malignancy in the primary growth. Few patients survive longer than five years.

Pigmented lesions of the skin are extremely common, whereas malignant melanomata are uncommon. The routine removal of all pigmented lesions to prevent malignant melanoma is not practical. The color of the mole is no indication of potential malignancy. Cauterization of pigmented naevi is dangerous as it may favor malignant degeneration.

J. FRANK DOUGLASS, M.D.

Orticofol, A.: The Action of Cobra Venom in the Treatment of Pain and Tumors (A propos de l'action du venin du cobra dans le traitement des algies et des tumeurs). *Presse Méd. Par.* 1934, xlii, 112.

The author discusses the treatment of intractable pain in cancer with cobra venom. The venom is used in quantities of 2½, 5, 10, 15 and 20 or more mouse units. A mouse unit is the minimum quantity of the venom which will kill a 25 mgm. mouse in seven hundred and eighty hours. The venom is given by hypodermic injection.

Cobra venom is a neurotoxic substance which is believed to enter into combination with the phosphates of the nerve cells without damaging the motor conductivity of the cells. After its administration over a period of days the pain for which it is given is greatly decreased and the patient is often able to get along without hypodermic injections of morphine even when he has long been accustomed to them. The venom does not act as quickly as morphine, but its effect is very much more prolonged. It is given at intervals of three or four days and at a temperature not under 70 degrees.

The author has used cobra venom in several cases. He reports a case in which it had an especially beneficial effect.

JOHN W. EATON, M.D.

DUCTLESS GLANDS

Oberling, C., and Guérin, M: *Deficiency Osteitis in Hens Confined in Cages: Its Relationships to Fibrous Osteitis and Hypertrophy of the Parathyroids* (Ostéites par carence chez les poules maintenues en cage, leurs rapports avec l'ostéite fibreuse et avec l'hypertrophie des parathyroïdes). *Ann d'anal path* 1934, 21, 97

It has long been known that fowls kept in cages for varying lengths of time develop skeletal lesions, especially softening and deformity of the sternum, femora and tibia. Such changes were observed by the authors in forty hens which had been kept in cages for from three to twelve months in the course of experimental work on cancer. These hens showed, in addition, marked enlargement of the parathyroid glands. In an attempt to determine the nature of the bony lesions and the parathyroid changes and their causes forty more hens were placed in cages under similar conditions. As a rule the changes did not appear definitely until after from ten to twelve months, but occasionally they were noted after a much shorter interval. The bones became so soft that they could be easily cut, resembling in this respect demineralized bone. Not all of the bones in the body were equally affected, those in the lower extremities being sometimes very dense and hard. Microscopic examination usually disclosed intense congestion of the osseous tissue and engorgement of the perivascular vessels of an almost anaplastic character. Frequently there was almost no difference between the compact and cancellous bone, the entire structure presenting a uniform spongy appearance. As a rule the bones of the skull and extremities were considerably thickened. In advanced cases, areas of the bone were transformed into a fibrous mass. Large cysts surrounded by a fibrous tissue wall and containing a serous or hemorrhagic fluid were occasionally found in the sternum, tibia, clavicle, and pelvic bones.

The authors concluded that it is possible to divide the lesions on the basis of their histological appearance into two main groups: lesions resembling those seen in osteomalacia and rickets, and lesions resembling those of fibrous osteitis. In the development of the lesions of the osteomalacic rachitic type there occurs first an intense vascular congestion in which the haversian canals become transformed into larger spaces so that the compact bone assumes a spongy appearance. This change results from a process of osteolysis. In the cancellous bone the osteolysis results in complete disappearance of the bony trabeculae. The vascular and connective tissue framework of the bone is little affected. The bone marrow remains active and normal in appearance. Occasionally there are formed new blood vessels which, burrowing into the bony substance, give the appearance of perforating canals which is so characteristic of osteomalacia and rickets. There is no evidence of osteogenesis, even at the site of spontaneous fractures. Occasionally there is a marked production of osteoid tissue. If osteolysis predom-

inates, an atrophic osteomalacia results, whereas if the osteoid production is dominant a hyperplastic lesion appears. Both may be present at the same time. Sometimes there is a thickening of the epiphyseal cartilages and abnormalities at the lines of ossification similar to those in rickets. In the development of the lesions of the fibrous osteitis type there is excessive bone destruction due to over activity of the osteoclasts and the bone becomes replaced in part or in whole by fibrous tissue. In these lesions also there is an excessive production of osteoid tissue.

Both types of lesions, namely those of osteomalacia and rickets and those of fibrous osteitis, may occur in the same fowl. In practically all of the hens studied the parathyroid glands were enlarged to three to four times their normal size. When examined microscopically the gland was found to have a normal structure. The striated muscles showed characteristic degenerative changes which the authors believe were due to a basic disturbance of the calcium metabolism rather than mechanical or infectious factors.

With regard to the etiology of the skeletal and muscle lesions and parathyroid hyperplasia the authors conclude that the deficiency of mineral salts in the diet plays a very important rôle. When adequate amounts of mineral salts were provided the typical bone lesions did not develop although a minor degree of osteoporosis and osteoid production occurred. Keeping the hens in the dark produced lesions resembling more those of osteomalacia than those of fibrous osteitis. However the authors are of the opinion that fibrous osteitis and osteomalacia represent only different aspects of one and the same disease. They believe that in osteomalacia the process is a vasculohumoral osteolysis, while in fibrous osteitis it is essentially a cellular reaction of the osseous mesenchyme.

In discussing the relation of these chronic osteopathies to parathyroid hypertrophy the authors state that, contrary to the view generally held, they do not regard parathyroid hypertrophy and hyperfunction as the initial incident. In their opinion the hypertrophy of the parathyroids is due to the disturbance of mineral metabolism produced by the withholding of calcium salts, and the skeletal changes are the result of the mobilization of osseous calcium caused by excessive parathyroid secretion due to the hypertrophy of the parathyroids.

Lester R. DeLoe, M.D.

Swamin, N. N.: *The Surgery of the Parathyroid Glands* (De la chirurgie des glandes parathyroïdiennes). *Lyon chir* 1934, xxv, 5

The author reports the results obtained in a large series of parathyroidectomies performed at the Metchnikoff Hospital in Leningrad. He states that various surgeons have claimed good results following parathyroidectomy in cases of von Recklinghausen's disease, Paget's disease, ankylosing arthritis, osteogenesis imperfecta, progressive muscular atrophy

scleroderma spontaneous cheloid, arthritis deformans, osteosclerosis, and myositis ossificans. Although von Recklinghausen's disease has been the condition most frequently treated by parathyroidectomy, only one case was operated upon at the Metchnikoff Hospital. The patient claimed that he was benefited but the bone lesions shown in the roentgenograms and the blood calcium were quite unaffected by the operation. In 116 cases of ankylosing polyarthritis or spondylo-arthritis good results were claimed. However the author gives no detailed statistics with respect to these cases. He calls attention to the fact that fatal tetany is more likely to occur following parathyroidectomy for von Recklinghausen's disease than following parathyroidectomy for ankylosing arthritis. Tetany

developed in none of the 116 cases of the latter condition operated upon at the Metchnikoff Hospital. The author performed parathyroidectomy in 1 case of osteogenesis imperfecta, but as the patient was not followed up after operation no conclusion as to the efficacy of the treatment could be drawn. Of 3 patients with scleroderma who were subjected to partial parathyroidectomy, 2 were believed to have been considerably benefited. In the third the disease was not affected by the operation.

The author is of the opinion that good results may be obtained by parathyroidectomy in cases of progressive muscular atrophy, but not in spondylo-arthritis deformans, myositis ossificans, or osteosclerosis.

LESTER R. DRAGSTED, M.D.

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NOTE.—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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INTERNATIONAL ABSTRACT OF SURGERY

OCTOBER, 1934

COLLECTIVE REVIEW

THE 1933 LITERATURE ON VASCULAR DISTURBANCES OF THE EXTREMITIES

W J BIERLE SCOTT M.D.

AND

HERMAN E. PEARSE, Jr. M.D.

From the Department of Surgery University of Rochester School of Medicine and Dentistry Rochester New York

OUTLINE

Introduction—Trends in 1933
Anatomy physiology and pathological physiology

Diagnosis

- A. General
- B. Oscillometry
- C. Arteriography

Clinical aspects

- A. General
- B. Arteriosclerosis
- C. Thrombo-angitis obliterans
- D. Arteritis
- E. Juvenile gangrene
- F. Raynaud's disease
- G. Aneurism
 - 1. Arteriovenous
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Treatment

- A. Passive vascular exercise
- B. Sympathetic interruption
- C. Arteriotomy
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- E. Amputation
- F. Vein ligation
- G. Miscellaneous

Veins

- A. Thrombophlebitis
- B. Thrombophlebitis from effort
- C. Phlebitis migrans

INTRODUCTION

THE year 1933 witnessed many contributions to the literature in the field of vascular disturbances of the extremities. The outstanding trends during that time were probably the following

1 The application of alternate suction and pressure as a method of treatment to increase the distal blood flow in the occlusive group of conditions.

2 Study of the relationship between the type of metabolism and the development of arterial degenerative lesions in diabetes.

3 A more general appreciation of the significance of vasoconstriction even in the organic group of vascular diseases.

4 Among diagnostic methods (a) more general use of thorotrast for arteriography in spite of our lack of assurance as yet that the radioactivity in the dosage used will not eventually prove deleterious, and (b) correlation of certain types of pathological lesions in the arteries with the clinical findings by the use of oscillometry

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A variety of methods of study have yielded further evidence of the segmental distribution of

vasoconstrictor nerve fibers to the vessels from the peripheral nerves. Sheehan (12) studied very carefully the distribution of visible sympathetic fibers to the blood vessels of the upper limb. The most striking features of the cervicodorsal sympathetic system are the great complexity and variability of its components. Sheehan therefore feels that ramisection is an uncertain method for complete denervation of the sympathetic supply to the upper extremity. Ransom (11) after outlining the general arrangement, called attention to the histological study of Burns who found more than 8,000 unmyelinated sympathetic fibers in the femoral nerve alone. After reaching the arteries these fibers run short distances in the nerve plexus of the adventitia before they join the terminal plexuses in the media of the vessels.

Telford and Stopford (13) agree with the conclusion drawn by Woodard and Phillips in 1933 that the blood vessels of an area of skin receive their vasoconstrictor supply from the peripheral nerves which provide the same skin areas with sensory fibers but they do not believe that the evidence is conclusive that such a simple arrangement of distribution applies to larger arteries such as the volar arch vessels in the palm.

Moore, Williams, and Singleton (10) compared the effects of various operative procedures on the appearance of the artery in the extremities of animals after roentgenographic visualization of the latter by the injection of sodium iodide into the aorta. They observed no marked effect following periarterial sympathectomy but noted definite dilatation of the peripheral vessels after sympathetic ganglionectomy and after section of certain peripheral nerves.

Landis and Gibbon (6) reported an interesting study of the vasodilator response in the feet to immersion of the hands in warm water. They found the usual response to be a vasodilatation as complete as that following the methods previously in common clinical use to overcome sympathetic vasoconstriction namely the intravenous injection of foreign proteins, the induction of spinal anesthesia and peripheral nerve block. Also in patients with arterial disease this reaction to warming of the blood usually corresponded to that produced by the previously mentioned tests although there were occasional interesting exceptions. Landis and Gibbon recommend the use of this physiological response as a clinical test.

One of the most interesting reports of the year was the clear-cut demonstration by Maddock and Collier (7) of a peripheral vasoconstriction associated with the smoking of tobacco both in normal individuals and persons afflicted with thrombo-

angitis obliterans. In normal individuals the same type of response occurred following the intravenous injection of nicotine. Both with smoking and the intravenous injection of nicotine, the vasoconstrictor effect in the extremity was of longer duration than the effect on the pulse rate or the blood pressure.

Craig Horton, and Sheard (3) verified the previously reported observation that general anesthesia causes maximum relaxation of vasoconstrictor tonus both in normal individuals and in persons with arterial disease. Severance of the sympathetic nerve supply to the extremity in Raynaud's disease and thrombo-angitis obliterans did not cause any additional vasodilatation. Craig Horton, and Sheard advise the use of general anesthesia in clinical cases as a check on the value of a proposed sympathectomy.

Iwanow (5) reported a successful method for injecting the lymphatic vessels in the walls of blood vessels.

DIAGNOSIS

General Kramer (15) discussed the methods of investigating the circulation in the lower extremities, emphasizing the importance of the history and a thorough physical examination. He believes that careful examination is not sufficient for a satisfactory conclusion regarding the condition of the circulation and should be supplemented by laboratory methods. He discussed the use of oscillometry, sphygmotonomography, the intradermal injection of histamin or saline solution, calorimetry, skin-temperature studies after nerve block, roentgen-ray examination, and arteriography and reported a study in which oscillometry, the intradermal injection of histamin, and X-ray examinations were used. One basis of his opinion that physical examination is insufficient for determining the status of the circulation is the fact that among his diabetic patients there were some with gangrene who had a good dorsalis pedis pulse. It is well known that diabetics develop gangrene as a result of infection in the presence of a normal peripheral circulation.

Pickering (17) also discussed the methods of diagnosis particularly helpful in the study of vascular disease. He emphasized especially the value of the re-activating hyperthermia test which he thinks is likely to supplant all diagnostic tests depending upon the simple release of vasomotor tone. In this connection attention should be called to the danger of applying a tourniquet about the extremity of a patient whose peripheral arteries are already seriously diseased.

Morrison (16) studied the dorsalis pedis and posterior tibial pulses in 1,000 individuals without

vascular disease. He found the posterior tibial pulse absent in 128 and the dorsalis pedis pulse absent in 89.

Scupham and Johnson (18) have perfected a method of visually recording the plethysmographic changes in the lower extremity or the various digits separately. They describe it as a plethysmometric method of studying changes in the circulation which can be used with any of the generally accepted methods of influencing the vasomotor tone.

Oscillometry Friedlander (20) feels that the form of the oscillogram is of greater importance than either the height of the oscillometric curve or the mean blood pressure. His curves were obtained from charting the readings with a modified Pachon apparatus. This is open to the criticism of individual interpretation which would not be applicable to the use of the recording oscillogram. The shape of the curves appear sufficiently accurate for definition of the different types.

It is found that the normal oscillogram shows the maximal phase between 100 and 80 mm Hg with a height of curve of from 5 to 8 units. In vascular sclerosis the range is narrower and the curve lower. In essential hypertension the maximum phase occurs at higher pressure (from 220 to 200 mm. Hg). Medial sclerosis shows a wide curve beginning at a high pressure and extending to the lower range.

Lian (21) also gave examples of various types of oscillograms.

Blavier (19) made a study of the oscillogram in an attempt to explain the physical factors entering into its composition. A special laboratory apparatus was used. He believes that the curve shows waves of 3 orders: (1) those due to periodic respiratory motions, (2) those due to direct rhythmical factors of inspiration and expiration, and (3) changes in amplitude of cardiac origin which vary inversely with the frequency of the heart.

Arteriography Roentgenographic visualization of the arteries or veins is rendered possible by the injection of an opaque substance, either methiodal (skioidan abroad) or thonium dioxide (thorotrast).

Patey Tatham, and Nicholas (26) Pomeranz and Tunick (27) and Ravina Sicard and Cotte not (28) have used methiodal for the study of varicose veins. They emphasize the importance of stagnation in varicose pouches which remain filled with the solution for long periods. Of interest is the fact that in some instances the injection fluid fills the deep veins as completely as it fills the varicosities. It is believed that during the injection treatment of varicose veins the sclerosing

solution frequently reaches the deep veins in a strong concentration, but thrombosis in these veins is prevented by the rapid flow of blood in the deep system.

Milch and Kling (25) used skioidan, and Yater and White (29) used thorotrast to define aneurysms. This was of value in determining adequate treatment for the lesions.

De Heredia (22) used thorotrast to localize brain tumors. This is an insufficiently investigated procedure, the safety of which has not been established.

Demel and Spalitzer (23) are of the opinion that the intra-arterial injection of uroselectan or skioidan has a beneficial therapeutic effect. This is contrary to general experience.

Lenche, Fontaine, and Friehe (24) used thorotrast by the method of Dos Santos. They believe that arteriography gives information of value regarding the amount and location of the obliteration, the condition of the artery proximal to the obstruction, and the extent of the collateral circulation.

It should be kept in mind by those using soluble substances such as skioidan that the injection causes pain and therefore requires the use of an anesthetic. The injection of thorotrast is painless, but thorotrast is a particulate slightly radioactive substance which is taken up by the reticulo-endothelial system and large doses may cause serious radio-active effects years after the injection.

CLINICAL ASPECTS

General Several good articles on the general clinical aspects of disturbances of the peripheral circulation appeared during the year 1933. Reid (34) presented an excellent discussion of the significance of circulatory changes in the practice of medicine and surgery and re-emphasized the fundamental importance of such factors as position, exercise and protection from trauma. Allen (30) outlined the diagnostic differentiation of the various common diseases and discussed the various principles of treatment. He described in detail his modification of the vascular exercises which are such an important part of the conservative treatment of all organic diseases of the lower extremities. Graham (32) Brown (31) Weiss (35) and Wright (36) presented discussions of peripheral vascular disturbances dealing particularly with their classification and clinical study.

Arteriosclerosis The most important development with regard to the pathology of diabetic arteriosclerosis is recognition of the correlation between the pathological arterial lesion and the type of metabolism [Gray and Sansum (39)]

Gabba, Buchner and Bloor (38) Loeper (40)]. There seems to be a positive correlation between an excessive lipid metabolism (probably especially that involving cholesterol) and the degenerative process in the arterial wall which may develop even at an early age in persons with diabetic arteriosclerosis. Accordingly, attempts are being made to prevent the development of arteriosclerosis by increasing the use of carbohydrates and decreasing the use of fat in the diet of diabetics.

Olmedo and Olch (4) in reporting a study of a series of injected legs amputated for arteriosclerosis, emphasized the importance so far as the result is concerned of the collateral circulation about the occluded main vessels.

Thrombo-angitis obliterans. A number of review articles discussing the clinical manifestations, pathology, diagnosis and treatment of thrombo-angitis obliterans were published in 1933 (See under heading "Treatment.") The studies of the pathological physiology particularly as it concerns the reaction to warming the blood and to smoking have been described in a previous section.

Rabinowitz (47) found what he considered a significant difference in the excretion of choline in the urine by patients with thrombo-angitis obliterans whereas choline was uniformly absent from the urine of normal male controls. He stated without presenting the evidence, that after much experimental work, choline and its derivatives were found to be easily converted into non-toxic compounds by activated sulphur. Therefore the latter (amount not given) was injected intravenously for two months and led thin-rich foods were excluded from the diet. Favorable results were thought to be obtained, particularly in the advanced gangrenous stages.

Arteritis. The term arteritis is used for such diverse pathological states as endarteritis obliterans, rheumatic arteritis, productive arteritis, arteritis obliterans, polyarteritis nodosa, and even thrombo-angitis or Buerger's disease. For this reason Krauer (54) proposed the classification of all inflammatory processes of the arteries as (a) acute arteritis, such as that occurring in acute infection (b) subacute arteritis, such as that occurring in periarteritis nodosa, syphilis, and tuberculosis, and possibly also that occurring in rheumatic fever and (c) chronic arteritis, including thrombo-angitis obliterans, arteriosclerosis, and the changes associated with diabetes.

Even with this flexible classification it is difficult to classify the type of progressive disseminated obliterating arteritis described by Barker

and Brown (50) and that described by Pfingst (55). However, it is probably preferable to use such a simple descriptive classification until the definite etiological agents are established.

Even in cases of arteritis of known origin there may be diverse manifestations. This was well shown by Herrmann who reported cases of peripheral syphilitic arteritis with angiospastic endarteritis and thrombo-arteritic characteristics. Costa and Mariotti (51) confirmed this impression of peripheral arterial involvement by syphilis in a systematic histological study of 31 proved cases.

Juvenile gangrene. The term "juvenile gangrene" has been applied in the literature not only to gangrene in the pre-adolescent stage but also to pre-senile gangrene in adults as old as fifty years of age. Only the truly juvenile or pre-adolescent type is considered here. Denecke (57) reported a pathologico-anatomical study of the etiology of juvenile gangrene. He feels that allergic phenomena producing marked vasospasm are the principal cause, but that embolism or metastatic infection may also play a part. Cases were reported by Vincenzo (59) and Seulberger (58).

Raynaud's disease. Leriche and Fontaine (61) reported a follow-up study of cases of Raynaud's disease in which operation was performed during the last ten years. In 5 periaxillary sympathectomy was done in 3 ramification combined with periaxillary sympathectomy and in 7 ablation of the stellate ganglion with or without other procedures. Leriche defended the operation of periaxillary sympathectomy and urged that it be considered for the less severe cases of Raynaud's disease in spite of the opinion of American and English surgeons and of physiologists with regard to its results. He called attention to the fact that even ganglionectomy is followed by recurrence in many instances. He is inclined to believe it is impossible to achieve a true total vasoconstrictor denervation of the extremity. Christman (60) reported a typical case of Raynaud's disease without scleroderma which showed calcareous concretions in the fingers.

Wess and Ellis (64) reported the occurrence of a Raynaud type of vascular disturbance precipitated by cold or by work in persons with arterial hypertension and arteriosclerosis. Physiological studies showed that the clinical manifestations were due to a vasospastic condition of the small arteries arterioles, and venules of the fingers. Ulnar anesthesia and the administration of typhoid vaccine failed to prevent or alter the induced attacks. While the attacks resembled those of Raynaud's disease in many respects,

particularly the critical temperature precipitating them they showed certain important differences including in addition to those mentioned the age at which they occurred.

Arteriovenous aneurism The changes in the cardiovascular system from arteriovenous aneurism were studied by Podkaminsky (70) Fick (65), Valverde (71) and Pazzagli (66). The cause of the rise in the blood pressure slowing of the pulse and dilatation of the heart with closure of the fistula was studied from the neurogenic and mechanical standpoints. All available evidence supports Holman's theory of a mechanical cause from increased blood volume. Fick (65) noted that cutting of the vagus nerve, splanchnic nerve or spinal cord or denervation of the vessels had no influence on the changes in the pulse and pressure with closing of the fistula. The cardiac hypertrophy as a work effect is explained on this basis. The occurrence of cardiac decompensation as a late complication of arteriovenous aneurism is proved by case reports. Small congenital fistulae may not cause cardiac changes. Decompensation is usually relieved by excision of the aneurism.

Cirsoid aneurism Kerr (73) described the treatment of cirsoid aneurism of the scalp. Although pulsation ceased when pressure was applied over the temporal arteries it returned soon after ligation of these arteries. The next step was exposure excision and ligation of the source vessels. This was done by exposing the vessels down to their emergence from the cranium and then enclosing them with sutures. A satisfactory result was obtained. Other articles on this condition were published by Hohlbach (72), Laskey (74) and Weakamp (75).

TREATMENT

Passive vascular exercise The most interesting development in the field of vascular disturbances of the extremities during the year 1933 was the application of alternate suction and pressure as a method of treatment. Investigations along this line were apparently carried out simultaneously by two independent groups one in the University of Pennsylvania Hospital and the other in the Cincinnati General Hospital.

Landis and Gibbon (77) reported first on the mechanical effects of alternating suction and pressure in a circulation schema and on the physiological effect upon the circulation of the normal human extremity, whereas Herrmann and Reid (76) first reported the effects of this treatment on a large number of patients with pathological conditions of the peripheral circulation.

There was conclusive evidence of a temporary increase in the blood reaching the extremity when vasoconstriction was eliminated. The negative pressure used varied from 70 to 120 mm Hg and the positive pressure from 80 to 120 mm Hg. The pressure and suction alternated rhythmically. The negative pressure was maintained for from fifteen to twenty five seconds and the positive pressure for about five seconds there being from 2 to 4 complete cycles per minute.

Herrmann and Reid (76) stressed the danger of using the higher positive pressures in cases of arterial disease as they believe that such pressures definitely conduce to the development of acute arterial thrombosis. The phase of positive pressure is useful chiefly to empty the capillary and venous bed so that it can be filled again from the arterial side during suction. Elevation of the extremity is also of value for this purpose.

Herrmann and Reid (76) reported the results of such treatment in 63 cases of organic obliterative arterial disease of one or more extremities during thirteen months. Of 14 cases in which from 5 to 7 treatments were given daily for several weeks on account of beginning or impending gangrene of one or more digits, sufficient circulation to stop the progress of the gangrene was obtained and major amputation was avoided in all. Cases of pure vasospastic disturbances were excluded by Herrmann and Reid (76) but Landis and Gibbon (77, 78) reported the combination of alternating suction and pressure treatment with relaxation of vasoconstriction by immersing the forearms in warm water baths.

Herrmann and Reid (76) reported that some beneficial effect of the treatment remains for from twenty four to forty-eight hours as shown by an increase in the surface temperature of the toes. Consequently, in the milder forms of obliterative arterial disease they gave treatment 3 times a week. Such treatments should be in addition to accepted general measures for promoting better circulation in the extremities.

This form of treatment by rhythmically alternating suction and pressure differs from the previous use of suction in the treatment of vascular disease (Bier) chiefly in that it provides for rhythmic emptying of the filled capillary and venous spaces after the suction has drawn the blood down into them. In this way fresh blood is drawn down from 2 to 4 times per minute the area is not merely congested with stagnant blood (See Meyer (79) regarding the use of this type of suction). Together these two groups of investigators have added important information with regard to the physiology of the peripheral circula-

tion and have furnished us with a principle of treatment in the non specific occlusive group of arterial disorders. The final value of the latter in our therapeutic armamentarium must be determined by experience.

Sympathetic interruption. Further reports of the use of sympathectomy for the control of the vasospastic elements in thrombo-angitis obliterans and Raynaud's disease and of investigations of the effect of the procedure on animals are continuing to appear.

In experiments on dogs, Herrick, Essex, and Baldes (85) found that on the side operated upon, the blood flow through the femoral artery was still at least twice as great as the flow on the normal side from eight to twelve months after the operation if this was investigated under local anesthesia. General anesthesia vitiates the determination, as would be expected from our knowledge of the peripheral vasodilating effect of general anesthesia. Thus (92) found a long-continued effect of sympathectomy after ligation of the femoral artery in dogs. In studies on rabbits, Lehman (88) noted a difference which he considered significant in the incidence of gangrene after arterial ligation with and without the addition of sympathetic ganglionectomy. However his series of animals was rather small.

Craig and Kernohan (83) found no significant lesions in cervicothoracic or lumbar sympathetic ganglia removed from 200 patients with Raynaud's disease, thrombo-angitis obliterans, arthritis, or scleroderma as compared with 40 consecutive controls removed post mortem from individuals without evidence of vascular disease.

In 25 cases of intermittent claudication, para-vertebral alcohol block of the sympathetic ganglia was employed by Reichert (86) for the control of pain with considerable benefit. Dogliotti (84) reported the use of the same procedure for angiospasm of the upper extremity. In a few isolated cases periarterial sympathectomy was also employed for the relief of pain.

Arteriotomy. The effect of the excision of a segment of an artery is so imperfectly understood that no certain rules can be laid down for the use of this procedure. It is probable that the interruption of the vasomotor nerves on the vessel wall accounts for any therapeutic benefit that may result from the operation and that consequently the method may be considered an interruption of sensory sympathetic impulses from the diseased arterial segment.

Leriche (95, 96, 97, 98, 99) is a staunch advocate of this procedure. He reasons that in occlusion of the artery there may be a permanent

stimulation of the vasoconstrictor nerves in the adventitia which superimposes a peripheral vasoconstriction upon the effects of the occlusion. He believes that by arteriectomy these paths are interrupted with resulting vasodilation.

Leriche and his co-workers reported favorable results in traumatic arteritis, obliterative arteritis, and Volkmann's syndrome.

Peripheral nerve section. Interruption of the peripheral nerves supplying a zone of painful ulceration or suppuration has been found a valuable therapeutic procedure in peripheral vascular disease. The present trend is to use the incisions proposed by Smithwick and White Laskey and Silbert (101) proposed nerve section with immediate resuture as a substitute for the alcohol injection previously used. A more complete block is thought to be produced by this means. Rovinsky (103) advised extirpation (neurectomy) of the segment of the peripheral nerve. All writers dealing with the operation advocate individualization of cases with interruption of either the superficial peroneal, the deep peroneal, the posterior tibial, the sural, or the saphenous nerve or any combination of these nerves that appears indicated for the region involved.

Little mention was made of trophic disturbances or of painful hyperesthesia during the stage of regeneration. These complications should be considered by those using the method. They are ordinarily subordinate to the advantages of the comfort of anesthesia and the vasodilatation resulting from peripheral nerve block in properly selected cases.

Amputation. Amputation is a confession of failure in peripheral vascular diseases. Probably the greatest advance in the recent period of interest in these conditions is the reduction in the incidence of required amputation. However in spite of all measures, this operation is still necessary as a life-saving procedure when the degree of circulatory impairment outstrips the development of collateral circulation too far or a virulent spreading infection gains a foothold in an extremity with a deficient circulation. Gangrene complicating diabetes is still an extremely dangerous condition to treat conservatively.

Vogel (106) brought out the interesting fact that in the Leipzig Surgical Clinic the mortality in arteriosclerotic and diabetic gangrene of the lower extremity from coma and sepsis is practically the same since the use of insulin as before its introduction (58 per cent in 31 cases treated with insulin and 56 per cent in 50 earlier cases) in a series of 314 cases of gangrenous extremities.

Smith (105) has worked out a method of amputation through the lower leg in which subperiosteal resection of the bone is done with minimal damage to the muscular tissues.

Vein ligation The most important contribution on vein ligation in 1933 was an article by Wilson (108). Wilson repeated the experimental work of Brooks which has been the basis for all subsequent studies. He was unable to confirm the observation that, in the rabbit, vein ligation diminishes the incidence of gangrene after occlusion of the iliac artery. The incidence of gangrene was 43 per cent with and without vein ligation. Studies made of the effect of proximal vein ligation and of venous occlusion on the intravascular pressure and oxygen consumption failed to show the benefits presumed to be derived from vein ligation.

It is probable that this work by Wilson will serve as a challenge to other investigators in the field. It should result in an interesting re-investigation of the subject.

Miscellaneous A great array of drugs, extracts, and physical agencies and miscellaneous procedures were reported during 1933 as used in the treatment of one or more of the common vascular diseases, but the number of cases in which most of them were tried was too limited to permit a definite conclusion regarding their value. Some of them may have merit as accessory agencies in the conservative treatment of these conditions. They included acetyl choline magnesium sulphate, muscle extract, pancreas residue extract, thyroid extract, parathormone, carbon dioxide baths, hot air baths, local diathermy, physiotherapy, X-ray irradiation applied locally and over the lumbar region, suprarenalctomy and parathyroidectomy. In our opinion none of these agents or procedures has yet established itself definitely as of outstanding therapeutic value.

VEINS

Thrombophlebitis Thrombophlebitis, while frequently of little consequence may be serious as pulmonary embolism resulting from postoperative thrombophlebitis accounts for about 6 per cent of deaths after operation. It is often associated with the debilitation of tuberculosis, malignant disease, or infection. According to Trauma (130), the process should be divided into the septic and the non-bacterial in which the blood platelets are increased. Perry discussed its incidence in acute rheumatism.

At all times the danger is due to the possibility that the thrombus may break free into the circulation and cause embolism. It is this possibility

that governs the treatment. Weiss (131) and Mackuth (125) suggested the use of elastic compression both for prophylaxis and for treatment. Gajzago (124) discussed the use of roentgen therapy. Neuhof (127) advised surgical excision of the thrombosed veins. Perhaps the most interesting development in the treatment of thrombophlebitis is the use of leeches or hirudination, which Mahorner and Ochsner (126), Oden (128), and Trauma (130) believe diminishes the possibility of embolism. However this effect is as yet unproved.

Thrombophlebitis from effort The phlebitis occurring after trauma, strain, or effort is important from the medicolegal aspect. Although thrombophlebitis may result from effort alone, infection often plays a part in its causation.

Ross (139, 140) discussed the theories of the cause of phlebitis from effort, which ascribe the condition to injury of the intima from muscular strain or impingement on bone, tearing of valves, or tearing of confluent branches at the point of union with the main vein. Following this discussion he reported several cases of spontaneous thrombosis in the axillary vein and other cases. The number of critically studied cases which have been reported makes it clear that thrombophlebitis can occur from trauma, strain, or effort. Thrombophlebitis from effort is most apt to result in the upper extremity. Clear-cut cases will probably become compensable.

Phlebitis migrans Migratory phlebitis without arterial involvement is a recognized entity which may remain confined to the extremities, but occasionally attacks the viscera. Douglas-Wilson and Miller (142) stated that the most common cause is a focal infection, especially a focal infection due to the streptococcus. Blood-stream infection may be occasionally demonstrated. The elimination of infection may bring relief. Walter (146), Hartfall and Armitage (143), Kletz (144) and Krieg (145) expressed substantially the same opinion.

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ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HEAD

Barret, M: The Anatomicoclinical Forms of Cranial Tuberculosis (Les formes anatomo-cliniques de la tuberculose crânienne) *Arch franco-belges de chir* 1935- 934, XIV 135

Following a review of the literature on cranial tuberculosis, the author describes four clinical types and reports a typical case of each. The description of the four types may be summarized as follows:

1. The localized perforating type. This is encountered almost exclusively in adults. It begins primarily in the diploe and presents three phases during its course: (a) a latent phase characterized by dull or lancinating pain, (b) a phase of tumor formation, and (c) a phase of fistula formation. The phases vary in length. Surgical removal of the focus is usually indicated.

2. The perforating type with multiple foci. This is seen especially in children. Tuberculosis is generally manifest elsewhere in the body—in the bones, joints, or viscera. The cranial features appear as multiple foci progressing as a true cold abscess with fistula formation causing very little pain. The prognosis is grave. As a rule death results from general fixed tuberculosis.

3. The progressive infiltrating type. This type occurs more frequently in adults than in children. Large portions of the bone are involved with the production of an extensive tuberculous osteomyelitis. The spread is so rapid that surgical treatment is often unable to check the course of the lesion. Frequently the lesion begins as a cold abscess that opens spontaneously with fistula formation. The functional symptoms are often insidious. Even when enormous portions of bone are removed the prognosis is usually unfavorable.

4. The osseous type secondary to a meningeal lesion. In this type the meningeal lesion is primary and the bone lesion secondary. Such a process is rare. The meningeal and brain involvement dominates the clinical picture. This, rather than tuberculous cachexia, is usually the cause of death. The condition is generally fatal.

The author discusses the diagnosis and treatment in detail. NATMAN A. WOMACK, M.D.

Rudenko, O: Tumors of the Bones of the Vault of the Cranium (Knochengeschwülste des Schädeldaches) *Ver chir Arch* 933 XIV, 137

According to their origin, tumors of the bones of the vault of the cranium may be divided into two

groups: tumors of blastomatous origin and tumors of osteodystrophic origin. The former include benign as well as malignant tumors: osteomata, osteofibromata, primary osteosarcomata. With the exception of the osteomata, they are extremely rare and chiefly of theoretical interest. Even osteomata of the cranial vault are uncommon. In the entire literature the author was able to find records of only twenty cases. To these he adds seven cases which came under his own observation. Osteomata of the cranial vault occur more frequently in females than in males, and most commonly on the forehead, the temporal or the parietal bone. In the author's cases they developed on the left side of the head.

The osteoma consists of bone-forming tissue and shows a compact structure (osteoma eburneum or durum) or a porous spongy structure (osteoma spongiosum). It occurs either in the interior of the bone (central osteoma) or on its surface (peripheral or periosseal osteoma).

All of the tumors in the author's cases were of the latter type and on microscopic examination showed the structure of ordinary spongy bone substance but slightly denser than that of the metaphysis. As the neoplasm arises from the diploe, Rudenko suggests that it be called osteoma spongiosa diploica.

Osteomata of the vault of the skull usually run a chronic course. The clinical symptoms produced by them are those of a tumor growing into the cranial cavity, taking up space within the skull, and compressing the nerve and vascular trunks by narrowing their exits from the base of the skull. The neoplasms may reach a very large size which renders them inoperable. In reported cases in which there were no symptoms of cerebral pressure the tumors were probably peripheral cortical osteomata. The roentgen findings are very characteristic, showing an intensive homogeneous shadow without any visible structure which gradually merges into that of the unchanged bony theme. The borders of the osteoma are difficult to distinguish even on section of the bone.

The treatment indicated is radical removal of the tumor. If this is no longer possible, a decompressive trephination on the opposite side is necessary. Of the author's seven cases—five, those of women—a radical operation was done in two. One of the patients operated upon radically was found well seven years later. In two cases the tumor could be removed only partially. In one of these a massive

hemorrhage occurred during the operation and the patient died two days later of cardiac insufficiency. The other patient remained well for fourteen years. In one case the condition was incurable. The result in two cases is unknown.

Tumors of the cranial vault of an osteodystrophic nature include the osteitis deformans of Paget and the osteitis fibrosa of von Recklinghausen. Those of the first type are a clinical rarity. The only case on record was reported by Kazakov. The number of cases of tumor of the osteitis fibrosa type reported to date is twenty five. To these the author adds two. The clinical manifestations of the osteoma fibrosa are a tumor of the bones of the cranium and a general and localized gradually increasing headache followed later by visual disturbances, choked disk, narrowing of the palpebral fissure, and protrusion of the eyeballs. A typical roentgen finding which is very important in the differential diagnosis is an irregular shadow with darker portions due to osteosclerosis and lighter portions due to osteoporosis. The treatment indicated is radical operative removal of the tumor.

The suggestion made in the literature that osteitis fibrosa and osteitis deformans may be identical is rejected by the author for the following reasons:

1. Osteitis fibrosa occurs in young persons, whereas osteitis deformans is found in adults and persons of advanced age.

2. The former produces a well-circumscribed, local tumor formation, whereas the latter causes a uniform thickening of the entire cranial vault. Moreover it can hardly be assumed that the individual nodes of osteitis fibrosa could lead to a general uniform thickening of the cranial vault in the course of years.

3. In osteitis deformans the bone grows in an outward direction and there are usually no brain symptoms, whereas in osteitis fibrosa the contrary is true.

4. The two tumors present a different histological picture.

In the author's cases operation was performed successfully. One patient was found to be in good health after three years. G. ALKOV (Z)

Stromberg, N.: Fracture with Luxation of the Collum Mandibulae and Its Surgical Treatment. *Acta Chirurg Scand* 1934, LVIII, 379.

Stromberg says that fractures of the collum and capitulum mandibulae are undoubtedly much more common than has been believed heretofore.

Luxation fractures are of special interest from the surgical point of view. These lesions are typical and nearly always require surgical treatment for a satisfactory result.

At the General Hospital and Sahlgren Hospital, Gothenburg, five cases of luxation fracture were under treatment in the course of the past year. In one of them the fracture was bilateral. In four there was a definite change in the bite. In the latter the treatment consisted of extirpation of the articu-

lated head. For this operation an incision behind the ear is best as when such an incision is used a good view of the operative area is obtained, lesions of the facial nerve are avoided, and the scar is cosmetically satisfactory.

In three of the cases reviewed the jaws were fixed after the operation by an intramaxillary connection. In one case a normal position between the teeth of the upper and lower jaws was obtained without such fixation. In all of the cases the after-examination proved the result to be satisfactory. In the case in which there was no change in the bite, operation was not considered indicated.

When there is a change in the bite, operation should be undertaken as soon as the patient's condition permits for if the jaw is allowed to remain for long in a position in which coaptation of the teeth is imperfect reduction and retention are rendered more difficult by muscular contraction and the accumulation of callus. The course of recovery is prolonged, and the ultimate result is more uncertain.

ETC

Huber E. and Picena, J. P. A Contribution to the Study of Intra-Ocular Ossifications. (Contribución al estudio de las osificaciones endo-oculares). *Rev. med. d. Rosario* 1934, XXIV, 197.

Although there is considerable literature on intra-ocular ossifications, there is no report of a systematic pathological study of the condition and in textbooks of ophthalmology and pathology such ossifications are either not mentioned or are treated summarily. There is general agreement as to their main pathological features, but many details remain unsolved.

The authors report a clinical and roentgenological study of nine cases, including one case of ossification of the lens. In four of the cases a histological examination was made.

They conclude that bony metaplasia occurs only in eyes presenting profound inflammatory changes. The origin of the bone is always the invading vascular connective tissue, which evolves directly into bone without the intermediate formation of cartilage. The osteoblasts arise in all probability from undifferentiated connective tissue cells. The myeloid tissue also which in all the specimens filled the interstices of the bone, has doubtless the same origin. The ossification may be of the trabecular, cavernous, spongy or osteoid type. Calcification of the connective tissue precedes bony metaplasia. In some of the sections examined perivascular foci of calcification were found.

Bone formation usually becomes apparent from six to eight months after the lesion and first in the internal layer of the choroid. The symptoms are not characteristic, being those of an iridochoroiditis ending in atrophy of the eyeball. This process relatively acute at the onset, initiates the metaplasia which then continues slowly, the inflammation being re-activated by traumatism or other factors after long intervals of freedom from symptoms.

A definite diagnosis can be made by roentgen examination although other orbital shadows may be confusing. Relatively soft rays should be used as the bone is usually of the spongy type. Better pictures are sometimes obtained by anesthetizing the conjunctiva and introducing a small film into the depth of the conjunctival sac on the temporal side. Roentgen diagnosis has not been used for this condition as widely as its merits warrant.

The clinical histories and the findings of roentgen and pathological examinations in the nine cases reported are given in full, and the text is supplemented by photomicrographs, roentgenograms, and a bibliography. **M E MORSE, M D**

Cohen, M: Orbital Lymphoma in Chronic Lymphatic Leukemia: Report of a Case. *Arch Ophth* 1934 21 617

The author reports a case of lymphatic leukemia associated with a lymphatic lesion of the orbit apparently unrelated to the lid, conjunctiva, or lachrymal glands.

He states that according to anatomists and ophthalmologists, the orbit contains neither lymphatic glands nor lymphatic vessels. However Birch Hirschfeld proved the presence of orbital lymphatic spaces with endothelial linings in animals, and he and other authorities on orbital diseases believe that lymphatic spaces are probably present also in the human orbit as well as in other parts of the human body. It is known, moreover, that in leukemic diseases lymphocytic infiltrations appear in the choroid and retina where lymphatics are supposed to be lacking.

Therefore it is possible that a leukemic nodule may originate in the orbit from lymphatic spaces around the adipose tissue or from perivascular lymphatic spaces.

According to Hochheim's classification, four types of lymphoma may occur in the orbit. Included in this group is the orbital leukemic growth of the type occurring in the case reported by Cohen.

Cohen believes that the inflammatory reaction observed in the orbital growth in his case was probably a secondary reaction in the growth itself and cannot be regarded as one of non-specific inflammation producing a granuloma or an inflammatory pseudotumor.

The structure of the growth showed no evidence of malignancy and there has been no recurrence or metastasis after five years. The general adenopathy is a part of the leukemic diseases and not metastatic.

The occurrence of marked edema of the lower lid of the left eye five months after removal of the growth on the opposite side, the general adenopathy and the blood picture indicate a general dyscrasia.

The fact that the pathological picture of the removed inguinal gland was similar to that of the orbital growth suggests a common cause, namely leukemia.

The clinical aspect of the case, especially the blood picture, was indicative of a persistent moderate lymphocytosis, the pathological changes, and the five-

year duration of the disease led to the tentative conclusion that the orbital growth was a lymphoma or a leukemic growth accompanying chronic lymphatic leukemia.

A review of the literature reveals various theories regarding the classification of orbital lymphomatous and the rarity of their occurrence. Further studies of the anatomy of the orbital and ocular lymphatics and more definite knowledge of the relation of the various forms of leukemia to orbital and ocular lesions are therefore necessary.

LESLIE L. MCCOY, M D.

Fuchs, A.: The Surgical Treatment for Iridocyclitis. *Arch Ophth*, 1934, 21, 391.

In cases of active iritis operation should be done only to save the eye and should be the most sparing procedure possible. The two types of operation performed in these cases are those intended to combat hypertension and those performed for optic reasons.

Hypertension may occur in the following types of cases:

1. Acute cases in which the anterior chamber is deeper in the affected eye than in the other eye. In such cases strong instillations of atropin with possibly intraglutal injections of milk are indicated. In cases of very severe acute rheumatic iritis which do not react to injections of milk, large doses (4 to 5 c cm.) of strong chinkolin, N N R, with casein injected into the gluteal muscle are beneficial.

2. Cases of chronic iritis with a very gradual course and hypertension due to an annular posterior synechia which leads to iris bombe. In such cases iridectomy is usually performed early to ward off glaucoma. In cases of iris bombe in which there is hypotension, operation is contra-indicated because it is followed by an unfavorable reaction. Operation for iris bombe depends upon whether the hump-shaped protrusion has just started or whether it has progressed to the point at which the angle of the chamber is obliterated. Under the latter circumstances the classical transfixation operation of E. Fuchs should be done and followed after a week or two by iridectomy. The author often saves the patient two operations by first performing a partial transfixation and iridectomy at once. Iridectomy ab externo (Salzmann) may also be done. The after-treatment is very simple. Atropin is given with good results. In cases of acute primary glaucoma the operation usually yields excellent final results, the pressure being apparently regulated permanently. In secondary glaucoma, especially when the anterior chamber is very shallow or obliterated, the operation has special advantages as the eyeball is easily fixed, practically no bleeding occurs, the operative reaction is slight, and the eye recovers relatively quickly.

3. Cases of increased pressure due to iritis serosa. In these cases cycloanalysis is inadvisable because the condition is caused by an overproduction of aqueous humor. Elliot's trephination is the operation of choice. The hypertension is extremely re-

stant, but after a period of from six to nine months is usually reduced. In cases in which the other eye has become involved as many as eighteen or more operations for the relief of hypertension have been done to save it. When puncture failed iridectomy was done, and when this failed one or more Elliot trephinations were performed. If the reduction of the pressure lasts eight or more days the puncture is repeated, but if it lasts a shorter time some other glaucoma operation is done.

Hypertension in scleritis due to disease of the ciliary body is most difficult to combat. It is usually more malignant, does not improve after a certain period, and often causes blindness.

4. Cases of severe hypertension due to diabetic iritis. Hypertension of this type, which may develop several weeks or months after a successful cataract operation is combated by puncture. The eye improves greatly in all respects, but recurrences occur until the eyes are ruined and no other operative procedure is of any avail.

The optic disturbances occurring in cases of recent iridocyclitis are dullness of the cornea, posterior corneal deposits, pupillary exudates, and various opacities. In chronic iritis there are three optic disturbances, viz. changes in the pupillary membrane, complicated cataracts and vitreous opacities. In general it does not matter whether optic iridectomy is performed in the region where the rim of the pupil is still free or where the iris is fixed to the lens. It should not be performed in the region of a total posterior synechia. A complicated cataract is often a problem because extraction is very difficult on account of a posterior synechia, fluid vitreous, and newly formed vessels on the iris. In cases of chronic iritis cataract extraction should be done only when the inflammation has completely subsided and there is no fresh exudation or infiltration. In cases with precipitates or slight dullness of the cornea, changes in the endothelium, gray nodules in the iris, hypotension, or hypertension it is definitely contraindicated and the eye should be given complete rest for from six months to a year. Earlier operation may lead to destruction of the eye.

In cases of cataract complicating chronic iritis the author always performs a preliminary iridectomy to determine how the eye will respond to an operation, to make the extraction easier and to prevent bleeding. He believes that the extraction should be done, not in the capsule, but in the usual way. The intracapsular operation should be undertaken only when the cataract is greatly shrunken and the capsule is very thick. When a secondary membrane develops, Fuchs performs a dissection with two needles through the cornea. He states that all methods of cutting a thick membrane are quite dangerous. Dragging on the ciliary body must be avoided.

Vitreous opacities must be regarded as the most serious optic disturbances in chronic iridocyclitis. Fresh opacities should be treated conservatively rather than by operation. When the opacities are

very old and there are no other signs of inflammation suction of the vitreous humor by the technique of zur Nedden may be done.

LESLIE L. MCCOY M.D.

Safar, E.: Detachment of the Retina. Treatment with Multiple Diathermic Puncture and Its Results. *Arch. Ophthalmol.* 1934, xi, 933.

Safar's development of the treatment of retinal detachment by diathermy dates back to animal experimentation carried out in 1930. It therefore followed Gonin's early work with ignipuncture. The method is claimed to be simple and quick and to cause less trauma to the eye than other procedures. Multiple punctures of the sclera are made with diathermy needles in the area surrounding the tear to cause coagulation of the underlying choroid. After removal of the subretinal fluid through the punctures the retina comes into contact with the choroid which reacts to the coagulation by an adheasive chorioiditis. In the formation of the chorioretinal adhesions which seal the retinal tear so that no more vitreous humor can pass under the retina to lift it up from the choroid the proliferating layer of pigment epithelium plays an important part. Needles 1.8 mm long are used on electrodes of various shapes. In cases of peripheral tears and those in which no tear can be discovered a large area can be demarcated and treated.

Of forty unselected cases in which the described method was employed in the first year of its clinical use (1932) permanent re-attachment of the retina with good vision and restoration of the visual field occurred in 57.5 per cent. Of forty cases operated upon in 1933 complete re-attachment which persisted up to the time this report was written was obtained in 85 per cent.

Early operation greatly increases the chances of recovery. After the operation absolute quiet is necessary. Both eyes should be bandaged for from ten to twelve days. The patient should then wear stenopaeic spectacles and should rest in bed for two or three weeks.

WILLIAM A. MANN, JR. M.D.

Rand, C. W.: Glioma of the Retina: Report of a Case with Intracranial Extension. *Arch. Ophthalmol.* 1934, xi, 982.

Attention is called to the newer classifications of glioma of the retina which include tumors designated as "medullo-epithelioma," "retinoblastoma," and "neuroepithelioma," depending upon the origin of the neoplasms and the cells found therein.

The author states that frequently because of the objections of the child's parents, enucleation is often not done early enough. Only about 57 per cent of cases are ultimately cured either by enucleation or exenteration of the orbital contents. While there are reports of cures following enucleation and radium irradiation in far-advanced cases, these are rare. Careful studies of the optic nerve should be made at the time of enucleation to determine if

extension has occurred along that nerve. In some cases in which the tumor has extended toward the chiasm, resection of the optic nerve is indicated. From the case reported, which was studied histologically the author concludes that there are two stages of intracranial extension: (1) along the optic nerve with final rupture through the sheath, and (2) intracranial extension along the base of the brain in the subarachnoid spaces.

WILLIAM A. MARY, JR., M.D.

EAR

Finberg, M., and Jorstad, L. H.: Primary Carcinoma of the External Auditory Canal. *J. Am. Otol. Rhinol. & Laryngol.* 1934, 43, 464.

The authors state that early diagnosis of primary carcinoma of the external auditory canal is difficult. The condition must be differentiated particularly from eczema of the auditory canal, chronic suppuration of the middle ear with cholesteatoma, and carcinoma of the auditory canal. Hummel emphasized the early occurrence of facial paralysis and labyrinthine involvement. Lymph node metastasis is rare, but destruction is common and may extend deeply into the neck and completely destroy the parotid gland, the mandible, and the carotid artery. The carotid artery may be found lying free in the necrotic carcinomatous area and may be completely obliterated without the occurrence of hemorrhage. Death results usually from marasmus and rarely from brain or lung complications. Brain abscess and meningitis are extremely rare. Deafness may be an early symptom. It may be of the nerve or internal ear type.

Rhinoscopy is of great aid in the establishment of an early diagnosis. In the case reported by the authors excruciating pain was an outstanding feature. Excruciating pain persisting for more than a week in cases of obscure lesions of the external auditory canal should suggest the possibility of malignancy. The anterior part of the external auditory canal is a common site of carcinoma. The skin layer soon becomes broken through and a polypoid growth appears with or without a discharge. The polypoid tissue is made up of granulations, but the base reveals the nature of the lesion. Early denudation of the bone is an important sign. The granulations found early in the disease have a tendency to bleed, but there is little or no tendency to bleed in the extensive destroyed area of the new growth.

The treatment is the same as that indicated for carcinoma elsewhere in the body.

ANTHONY F. SAYA, M.D.

Harwood H. B.: Some Notes on the Ear in Relation to Head Injury. *Med. J. Australia* 1934, 4, 681.

The author states that the greater proportion of persons with persistent deafness after a head injury have a nerve type of deafness. A large number complain of tinnitus. Only a small percentage have suppuration of the middle ear. Facial paralysis, when

it occurs, usually tends to disappear. A large number of persons who have sustained a head injury suffer from dizziness, but of these a large proportion show no abnormality to the caloric and rotation tests. The dizziness tends to become less, but in some cases may persist for a long time.

JAMES C. BRASWELL, M.D.

Crowe, S. J., Guild, S. R. and Polvogt, L. M.: Observations on the Pathology of High-Tone Deafness. *Bull. Jah. Hospitas Imp. Bah.* 1934, 4, 315.

The authors state that their observations prove very definitely that the receptors for high tones are located in the basal turn of the cochlea. Three-fourths of the ears with impaired hearing for high tones had lesions of the basal turn more extensive and severe than were found in any of the control group.

JAMES C. BRASWELL, M.D.

Courville, C. B. and Nielsen, J. M.: Fatal Complications of Otitis Media with Particular Reference to the Intracranial Lesions in a Series of 10,000 Autopsies. *Arch. Otolaryngol.* 1934, 42, 451.

In this review of the fatal intracranial complications of otitis media and mastoiditis which were found in 10,000 autopsies, difficulty was encountered in evaluating the autopsy records, especially in distinguishing between coincidences and consequences, determining the role of associated sinus infection, and establishing the relationship of various intracranial lesions.

Otitis media is often a terminal condition without importance in the fatal issue. The mortality is highest in the first year of life. At that age, death is usually due to malnutrition, dehydration, bronchopneumonia or diarrhea. Intracranial complications are infrequent. Meningeal irritation developing during the course of otitis media has sometimes been given a good prognosis on the basis of a low cell count in the spinal fluid, only to develop later as a tuberculous meningitis.

The most frequent intracranial complications following infection of the petrous pyramid are extradural abscess and meningitis. Thrombosis of the cavernous sinus and abscess of the temporal lobe are extremely rare and have not been proved to be complications of petrous pyramid infection. In some cases an unsuspected mastoiditis has been found. Erosion of the dural plate cannot be interpreted as indicating a temporal lobe infection even when symptoms of intracranial extension have occurred. In the cases reviewed the degree of necrosis of the tegmen tympani and of necrosis of the sinus plate varied considerably. The necrosis of the sinus plate was often more extensive, especially when it was secondary to empyema of the mastoid cavity. The usual bony changes were present in varying degrees, but in some of the cases pus was found between the dura and the bone in the absence of grossly visible changes in the bone, a possibility already well known to otologists.

The authors pay special attention in their report to subdural abscess and dural fistula. They discuss the incidence and pathogenesis of thrombosis of the venous channels and the complications of this condition. They state that in its simpler aspects the formation of the thrombus is due to a contiguous infection involving the smaller vessels or the wall of the lateral sinus itself. A small mural thrombus may resolve spontaneously, develop extensively or break down to form an abscess. More complex conditions result from retrograde extension or from the retrograde flow of infectious particles resulting in the establishment in the brain, at a considerable distance from the original thrombus, of infectious foci without any demonstrable connection with the original thrombus. Metastases from the original thrombus may be the result of hematogenous infection, the release of thrombotic particles into the blood current, or retrograde extension through an obstructed venous channel. The metastatic foci are found most commonly in the lungs and pleura.

Lesions affecting the leptomeninges are recognized as being (1) re-active or toxic disorders, in which recovery usually follows drainage of the original suppurative focus, and (2) a septic process due to infection of the subarachnoid space. An interesting lesion attributed to the late effects of meningeal irritation is chronic adhesive arachnoiditis. Chronic thickening of the arachnoid has a variety of causes, including senility, syphilis, and head injuries probably with subarachnoid hemorrhage. In 1 of the cases reviewed a cyst was found in the right lateral recess.

Nonsuppurative encephalitis of otitic origin is not well known pathologically. Clinically, it indicates a varying degree of inflammation within the brain secondary to an infection in the middle ear or mastoid. Temporary alteration in the blood supply or toxic irritation may account for some of the less marked neurological manifestations.

In the 10,000 autopsies reviewed, 75 cases of abscess of the brain were found. In 46 per cent of the latter the condition followed otic infection. A classification of cerebral and cerebellar abscesses based on their morbid anatomy is suggested.

In conclusion the authors describe a method for removal of the brain and outline a plan of study of the intracranial contents of patients dying of complications of otitis media. E S PLATT, M D

Lurie, M. H. Davis, H., and Derbyshire, A. J.: The Electrical Activity of the Cochlea in Certain Pathological Conditions. *Ann Otol Rhinol & Laryngol* 1934 xliii 321

The authors state that the cochlear response depends upon the organ of Corti as it is absent when the organ of Corti is absent; it has never been found absent when the organ of Corti was entirely normal and partial degenerations or deficiencies of the organ of Corti cause partial and sometimes complete, deficiencies in the cochlear response.

It is probable that nerve impulses are initiated by the cochlear response as the threshold curves

for both run parallel in most animals. Nerve impulses may be seriously deficient or absent when the cochlear response is present and nerve impulses have not been found in the absence of the cochlear response except when the threshold of the latter was raised by unfavorable local electrical conditions of detection or by interference from nervous response and in one doubtful incomplete case.

The basal portion of the cochlea responds to high tones and the apical portion to low tones but with a rather wide extent of physical vibration to strong tones. Deficiency of the organ of Corti in the basal turn causes a greater elevation of threshold in the high tonal range than in the low tonal range but no abrupt transitions have been noted.

The cochlear response is probably a good indicator of the activity of the organ of Corti, but the extent of an animal's hearing can be evaluated better from the action potentials of the auditory nerve. In cases of true central nerve deafness even these may lead to error. JAMES C. BRASWELL, M D

Mowrer, O. H.: An Analysis of the Effects of Repeated Bodily Rotation with Especial Reference to the Possible Impairment of Static Equilibrium. *Ann Otol Rhinol & Laryngol* 1934, xliii 367

The author states that previous investigations have convincingly demonstrated that the vestibular nystagmus occurring after bodily rotation may be substantially reduced—sometimes virtually abolished—by repeated elicitation. He cites experimental results which indicate that the reduction is not accompanied by, nor dependent upon, a demonstrable change in or injury to the vestibular receptors. Therefore he emphasizes that absence or unusual brevity of this response cannot be regarded as an unequivocal proof of vestibular disease.

Mowrer's experimentation has shown that the vestibular reflexes involved in the maintenance of static equilibrium are not detectably impaired by repeated bodily rotation. This fact seems to warrant the assumption that the effects of repeated rotation are limited to a reduction in the duration of nystagmus (and in the vividness of the subjective phenomena which have been shown to be dependent upon nystagmus).

In conclusion Mowrer suggests that the shortening of postrotational nystagmus produced by repeated elicitation may be dependent upon a more or less enduring change produced in the stimulation threshold or in the refractory phase of certain neurons comprising the so-called after-discharge mechanism upon which persistence of vestibular nystagmus after cessation of objective stimulation is now thought to depend. JAMES C. BRASWELL, M D

Hagens, E. W.: The Anatomy and Pathology of the Petrous Bone Based on a Study of Fifty Temporal Bones. *Arch Otolaryngol* 1934, xii, 556

Hagens is of the opinion that the anatomy of the petrous bone may vary considerably as regards

pneumatization Of the bones studied by him approximately 34 per cent showed pneumatic spaces in the petrous tip. The distance between the cochlea and the internal carotid artery just below the level of the tegmen tympani varied from 4 to 10 mm and averaged 6.5 mm.

In acute suppurative otitis media and simple chronic otitis media there may be an associated infection of the petrous bone depending on the degree and extent of pneumatization. The petrous may be extensively infected when the condition is clinically unrecognized.

Intracranial complications may occur by extension from the antral region or from infected pneumatic spaces in the petrous.

The labyrinth seems well protected from infections of this type.

In perforation of the membrana tympani, the epidermis is able to grow around the "corner" onto the inner surface.

JAMES C. BRASWELL, M.D.

NOSE AND SINUSES

Adam, J.: Atrophic Rhinitis. *J. Laryngol. & Otol.* 934 xlii, 375

In a review of 141 cases of atrophic rhinitis the author found that in at least 78 per cent the condition began before puberty and in at least 42 per cent it began during the first seven years of life. These are the years during which, under normal conditions, the face, nose, and accessory nasal cavities develop most quickly. As the result of the atrophic rhinitis their development is retarded. When the condition begins in adult life, the typical facies of atrophic rhinitis does not occur.

The disease begins as an inflammation of the nasal mucosa. In about 66 per cent of the cases sinusitis is present. The sinus involvement tends to keep the inflammation alive and is often overlooked. The ethmoid and adenoids are affected more often than is realized. The present custom of dealing with adenoids early has reduced the incidence of atrophic rhinitis.

Another factor in the condition is deficiency of vitamins, especially Vitamin A. This reduces the defense against infection and lowers endocrine function. It may also impair nervous function.

The mucosa reacts first by hyperplasia. Later because of fibrosis, glandular atrophy and a change from columnar epithelium to stratified epithelium occur. If the sinusitis is overcome early enough by proper surgical and other measures, there may be considerable recovery with disappearance of crusts and fetor.

The bone of the thin lamellae of the turbinates and the ethmoid cells reacts by atrophy and that of the walls of the accessory cavities by sclerotic thickening. Similar sclerosis is found in the mastoid processes of children with chronic suppuration of the middle ear. Failure of the paranasal sinuses to reach their full development results in facial modification.

JAMES C. BRASWELL, M.D.

MOUTH

Ritchie, H. P.: Congenital Clefts of the Face and Jaw. A Survey of 250 Cases in Which Operation Was Performed. *Arch. Surg.* 1934, xlviii, 617

Three hundred and fifty cases of harelip and cleft palate are reviewed from the standpoint of associated deformities and familial incidence, the combination and degree of the clefts, the age and sequence of repair, the operative technique, and the results. The cases are classified according to whether the cleft was pre-alveolar, post-alveolar or alveolar.

A family history of clefts of the face and jaws was given in 34 cases. One of the patients had 3 brothers with clefts. Other deformities were present in 26 patients. One patient had multiple clefts.

Pre-alveolar clefts were present in 38 cases. These are incomplete harelips not involving the palate, alveolar ridge, or floor of the nostril. In cases of defects of this type operation is not urgent as the baby is able to nurse and the lip tissues develop along with the body.

Post-alveolar process clefts were present in 56 cases. The hard and soft palates are cleft to varying degrees, but the clefts are always symmetrical, that is, have an equal amount of tissue on both sides. As the occlusion of the upper and lower jaw is normal, attempts to narrow the cleft are unwise. Operation on the palate has usually been postponed until between the ages of two and four years. The author discusses in considerable detail the sequence of operation on the hard and soft palates. The choice of procedure is determined by the type of the deformity and the patient's condition.

Clefts of the alveolar process occurred in 258 of the cases. In 42 of these the palate was normal. Clefts of the alveolar process should be closed as early as possible while the bones are soft and pliable. The lip should also be closed early as it has an important part in closing the cleft underneath. This should be done before the age of three months.

The 350 children were subjected to 567 operations with a mortality of 1.4 per cent. The technique of repair is described in detail. The importance of obtaining correct muscle apposition in the lip is stressed. As the flat and flaring nostril caused the greatest dissatisfaction to the author, he has studied this problem particularly. He presents a method for the correction of this deformity.

The article contains reproductions of a special history and a physical examination form and numerous tables, sketches, and photographs. The author discusses his poor as well as his good results.

THOMAS W. STEVENSON, JR., M.D.

Touraine and Solente: Glandular Chelitis, a Pre-cancerous Condition of the Lower Lip. (La chélie glandulaire. État pré-cancéreux de la lèvre inférieure). *Presse Méd.* Par. 1934, xlii, 191

There are two forms of glandular chelitis, the simple and the suppurative. The former is quite

common, though it is often so slight as to be overlooked. Simple cheilitis is a hyperplasia of abnormal salivary glands of the lower lip with enlargement of the excretory ducts and their openings. In the suppurative form there is suppuration in addition.

The site of cheilitis is the red part of the lower lip that shows when the mouth is closed. The simple form of the condition never extends to the skin or the part of the lip that is in contact with the upper lip, but the suppurative form sometimes extends to the skin of the lip and chin. The condition begins gradually and in the simple form the lip is little or not at all deformed. The affected part of the lip is covered with small red or violet spots the size of pin heads, the center of which is the opening of a salivary gland. In recent cases these spots do not project and the lip is normally supple. Later they protrude and give the lip a leukoplakic appearance. The lip is then less supple though it cannot be said to be indurated. Sometimes small, round, enlarged glands like shots can be felt in the lip. A few drops of thready mucous fluid can be expressed from the openings. There is absolutely no pain even on palpation, and no abnormal salivation.

The course of the disease is very chronic. Sometimes there are attacks of congestion during which the glands become slightly sensitive. These attacks pass off spontaneously but often occur in the transition stage from simple to suppurative cheilitis.

The prognosis is grave in the simple form as well as the suppurative form. Cancerous degeneration seems to occur in the former even more frequently than in the latter form. Epithelioma develops from the stratified pavement epithelium of the excretory ducts of the glands.

Dressings of various kinds such as potassium iodide and tincture of iodine, have been used. In some cases they have caused improvement but as a rule they fail. Radiotherapy is the best treatment. A careful watch should be kept, and if there is the slightest suspicion of cancer a piece of tissue should be excised and examined. If it shows cancer radical treatment should be given at once.

AUDREY Goss MORROW M.D.

Zajewski M., and Libin, S.: Sepsis of Dental Origin (Zur Lehre ueber odontogene Sepsis). *Ann. chir. Arch.* 1933 xxviii, 467.

In a series of 600 autopsies performed in the period from 1930 to 1933 the authors found 10 cases of fatal sepsis of dental origin. They have observed also 3 cases of such sepsis with recovery. In 2 cases caries of a wisdom tooth led to oral infection which, in spite of surgical intervention, developed into fatal Ludwig's angina. In 3 cases the septic process originated from an alveolar pyorrhea and in 7 from acute suppurative osteomyelitis of the jaw. In regard to the latter the authors emphasize the important role of gangrenous teeth and roots in the pathogenesis of osteomyelitis. They question the wisdom of conservative treatment in such cases especially when many roots are involved and the rest of the

masticating apparatus is in good condition. They do not approve of the oral hygiene recommended by Kantorowicz as they regard it as inadequate. They believe it is much better and safer to remove the gangrenous temporary tooth than to treat it and leave a potential septic focus in the mouth.

In concluding their discussion they point out the great danger from dental and parodontal inflammations to the whole organism and the possibility of focal infection in distant organs from oral sepsis. Their own autopsy material indicates the danger from dental sepsis (found in 1/3 per cent of all autopsied cases) and the necessity for considerably more attention to the oral cavity as regards timely prophylaxis and treatment of dental diseases.

G. ALROY (Z)

Cade, S.: Non Malignant Conditions of the Tongue. *Practitioner* 1934 ccxviii, 641.

Of most practical importance in the diagnosis of non-malignant conditions of the tongue is their differentiation from malignant lesions. In cases of ulcer it is necessary to determine also whether the lesion is syphilitic, tuberculous, or traumatic, and in cases of tumor whether the neoplasm is a surgical rarity such as a lipoma or fibroma. A positive Wassermann reaction or the presence of tubercle bacilli in the sputum does not prove that a lesion of the tongue is not malignant. In cases of suspicious lesions biopsy should be done and the intervals between observation should not exceed two weeks.

With regard to treatment the author says that the silver nitrate pencil has caused more cancers than cures of benign lesions, and that caustics should never be used.

GEORGE A. COLLERT M.D.

PHARYNX

Beck A. L.: Pharyngeal Infections and Internal Jugular Vein Thrombosis. Diagnosis and Treatment. *Laryngoscope* 1934, xlv, 431.

Any inflammation from which infection of a cervical lymph node may occur may cause a neck infection. All the layers of the deep cervical fascia may be regarded as offshoots from the carotid sheath. In the upper part of the neck there are three large compartments which communicate more or less directly with the sheath of the great vessels. In attempting to classify neck infections anatomically and clinically the author groups them according to their regional manifestations.

In Beck's classification there is one group that of cervical gland infection, which does not conform to a definite anatomical classification. There is a sharp distinction between inflammation of the superficial cervical glands and inflammation of the deep cervical glands. Suppuration of the superficial cervical glands is the only type of neck infection in which it is safe to delay treatment until fluctuation is present. In cases of inflammation of the deep glands constant watching is necessary. Spontaneous recovery is common, but evidence of a generalized septicemia

may appear suddenly after an apparently moderate inflammation of these glands has been present for several weeks. When once a definite sepsis has developed drainage is indicated.

In conclusion the author points out that the occurrence of a metastatic infection may be regarded as a positive indication for immediate surgical drainage of infections of the neck as well as for section of the internal jugular vein. When treatment is given promptly subsidence of secondary manifestations may occur spontaneously. Absence of free viable pus in the compartment at the time of operation is very common and does not justify the conclusion that infection is not present. The author has seen a macerated, necrosed jugular vein with complete obstruction by thrombosis, in the absence of viable pus. He believes that thrombosis of the internal jugular vein is the cause of the sepsis which terminates life when drainage is delayed. This thrombosis is often unrecognized. *HILSHAR F. THURSTON, M.D.*

Abt I. A.: Postanginal Sepsis. In: Otol Rhinol & Laryngol. 1934, XLIV, 44

Postanginal sepsis with thrombophlebitis of the internal jugular vein has only recently received careful study. The first recognized case was described in 1912. The two important regions which may serve as the area of infection are the retropharyngeal space and the pharyngeal space.

According to one theory the infection occurs by way of the blood stream according to another by way of the lymphatics and according to a third, by way of the tissue spaces.

The condition is characterized clinically by thrombophlebitis and pyemia. Various organisms have been recovered—staphylococci, hemolytic streptococci, the streptococcus viridans, and the anaerobic streptococcus putrificus. The sepsis usually follows a tonsillar infection, a pharyngeal phlegmon, or an intratonsillar abscess. It is most common in young healthy individuals, especially those between the ages of twenty and thirty years. The onset of chills after subsidence of the angina is clinically important. The most serious and frequent complication is metastasis to the lungs. Peritonsillar abscesses and septic arthritis are not infrequent.

The prognosis is grave, but more favorable if the purulent focus is detected and its contents are evacuated early. A prompt surgical procedure—evacuation of an abscess or the ligation of the jugular vein—will diminish the hazard and lower the mortality. Early ligation of the jugular vein is generally regarded as the only logical treatment when the diagnosis of septic thrombophlebitis has been established. *WALTER H. NAPER, M.D.*

Nordentoft, J.: Cases of Prolonged Cure of Oral and Tonsillar Carcinomata (Quelques cas de tumeurs de longue persistance de carcinomes buccaux et amygdaliens). Acta chirurg Scand. 1934, LVIII, 263

The author reviews ten cases of carcinoma of the mouth and carcinoma of the tonsil.

In a case of extensive carcinoma of the left tonsil associated with lymph-gland metastasis, a five-year cure was obtained. At the end of the five-year period a cancer appeared in the right tonsil. This remained cured for more than three years. The patient survived with freedom from symptoms to the age of seventy-six years. In the case of a patient who had a large alveolar cancer with glandular metastases, the primary tumor was cured for eight years and the glandular metastases for seven years. This patient died recently of pneumonia without recurrence. A third patient lived to the age of eighty years without recurrence for nine years after treatment of a cancer of the palate. A fourth patient, who had a sublingual cancer was cured of the primary tumor for seven years and of a recurrence for five years. In the case of a fifth, who had a very extensive cancer of the mouth with glandular metastases, a clinical cure was obtained, but the treatment was given only about a year ago.

Of the five other patients, two did not develop local recurrences but died of glandular metastases following radical operation and intercurrent maladies. One, who had a tumor the size of an orange, remained free from recurrence for a year. Radium treatment of a recurrence at the end of that time was followed by pneumonia and death when the patient was seventy-four years of age. The two other patients had very advanced lesions which were not treated until after the occurrence of extensive glandular metastases. They died after long resistance to the disease during which they showed considerable improvement at times. In both, resection of half of the lower jaw was done.

In all of the cases electrocoagulation, roentgen therapy, radium therapy and operative excision of the glandular metastases were preferred to the use of the diathermy knife.

A patient who had a large papillary carcinoma on the external surface of the cheek remained free from recurrence for seven years after treatment with roentgen irradiation alone.

The article is concluded with some observations regarding radium and its importance as a supplement to surgery.

RECK

Lerman, J. and Salter, W. T.: The Calorigenic Action of Thyroid and Some of Its Active Constituents. Endocrinology 1934, XXIV, 317

The effect produced on the basal metabolic rate in five cases of myxedema by the daily administration of 1 mgm. of thyrotoxin polypeptide by mouth was found to be approximately the same as that produced in four other cases in which the same substance was given intravenously. Close agreement was found also when a single large dose of this substance was given intravenously and orally to each of two patients with myxedema.

In three other cases of myxedema a much more rapid rise in the metabolic rate was produced by the oral administration of whole thyroid in equiv-

lent thyroxin iodine dosage, and a rise as rapid as that caused by the larger dose of thyroxin polypeptid was produced by a much smaller dosage of whole thyroid on the basis of thyroxin iodine. When four commercial preparations of whole thyroid were compared on the basis of total organic iodine content better agreement of calorogenic activity was found than when they were compared on the basis of thyroxin iodine content.

The authors conclude that di-iodotyrosin iodine is calorigenically potent so long as it is part of the thyroglobulin molecule but loses its activity when it is separated and that thyroid substance should be assayed in terms of total organic iodine rather than thyroxin iodine.

PAUL STARR, M D

Delcourt Bernard E.: An Experimental Study of the Action of 3.5 Di Iodo-Tyrosin in the Treatment of Hyperthyroidism (Étude expérimentale de l'action de la 3.5 di-iodo-tyrosine dans le traitement de l'hyperthyroïdisme) *Res belge d ex méd.*, 1934, vi, 1.

Di-iodo-tyrosin is found in the thyroid. The authors experimented with it in the treatment of twelve cases of hyperthyroidism, comparing its action particularly with that of Lugol's solution. Doses of 0.10, 0.20, and 0.30 gm equal to 58, 117 and 175 mgm. of iodine per day were given.

The di-iodo-tyrosin was found to have an effect on the increased respiratory metabolism of hyperthyroidism no matter what the clinical form of the disease. Of the twelve cases studied, it decreased the metabolism in eight and increased it in four. The mechanism of this action seems to be different from that of Lugol's solution. When Lugol's solution lowers the metabolism it seems to act on ventilation rather than on oxygen consumption but when it increases the metabolism it acts on oxygen consumption more than on ventilation. Di-iodo-tyrosin seems to lower oxygen consumption more than it lowers the metabolism and to act on the two factors equally when it raises the metabolism.

A greater increase in weight was brought about more frequently by Lugol's solution, than by di-iodo-tyrosin. The pulse and other symptoms of hyperthyroidism seemed to be affected about equally by the two preparations.

The author does not find di-iodo-tyrosin so effective as claimed by certain German investigators, and he does not believe that it acts purely and simply as an inorganic iodine solution as is claimed by some American investigators.

From the therapeutic point of view he finds that di-iodo-tyrosin is readily absorbed and well tolerated. Though it is less effective than Lugol's solution it may be used alternately with the latter and to replace it when Lugol's solution is no longer well tolerated by the stomach. Patients treated with it should be kept under close observation because in some cases it causes an increase in the basal metabolism and the pulse rate.

AUDREY Goss MORGAN, M D

Lewine M M: The Treatment of Tetany Following Thyroidectomy by the Transplantation of Boiled Bone According to Oppel's Method (Sur le traitement de la tétanie après strumectomie à l'aide de la transplantation d'un os bouilli suivant la méthode d'Oppel) *Lyon chir* 1934, xxi, 164.

The most serious complication following thyroidectomy is tetany. According to some surgeons, tetany occurs in from 3 to 5 per cent of cases. At the Mayo clinic it occurred in only 1 of 3,203 cases in which thyroidectomy was done. With total extirpation of the gland its incidence increases to from 20 to 30 per cent. The parathyroid glands are not always uniformly located, and sometimes there may be as many as 3 or 4 on one side and only 1 on the other. Moreover tetany may follow an operation at a distance from the parathyroids such for instance as cesarean section. Operation may change a latent tetany into an active tetany.

As tetany is known to be due to hypofunction of the parathyroids it was deemed logical to attempt to cure it by the transplantation of parathyroid tissue. In spite of favorable immediate results in a few cases, this method did not seem to produce lasting results. In 73 cases in which Oppel performed it the increase in the blood calcium was not stable. The administration of organic extracts of parathyroid has also proved unsuccessful. In 1 case Greenwald and Gross obtained good results by having the patient drink a glass of fresh blood from the abattoir every day.

When the relation between bone formation and the formation of the parathyroid glands was demonstrated, Morel proposed treating experimental tetany by bone injury. In 1925 Oppel suggested the introduction of a deposit of calcium into the body to raise the blood calcium. He tried transplanting a fragment of bone under the skin. He believed that the calcium from such a deposit would enter the blood slowly because the bone would become resorbed slowly. The calcium of the blood rose for some months, but then fell again although not so low as before the intervention. The calcium did not appear in the blood until five days after the transplantation. For this reason Oppel usually implants the bone from five to seven days before performing thyroidectomy. He uses bone from a cadaver or boiled beef bone. A piece of the cortex of a long bone was found suitable. At first the bone was boiled in rivanol but as the rivanol proved slightly irritating it was later boiled in a saturated solution of soda and in physiological salt solution.

Clinical cases of postoperative tetany treated by this method have been reported by Oppel, Petrova and Saxontowa. Cases in which the implantation of bone following the transplantation of parathyroid tissue gave good results were reported by Perzowsky and Belgorodsky. Melikhova treated a case by the transplantation of bone ultraviolet irradiation and a lactovegetarian diet, but the results were not favorable. The bone was pulverized before it was implanted, and a hematoma formed.

Transplantation of bone has been tried also for nonoperative tetany. Belgorodsky obtained good results in a case of congenital tetany and in several cases of tetany in adults.

The case reported by the author is the fourth to be reported in the literature on transplantation of bone for postoperative tetany. The convulsions disappeared shortly after the implantation, even before the blood calcium was increased. A survey of the available literature showed that at the thirty-first Congress of French Surgeons Lench proposed the transplantation of bits of bone to induce hypercalcemia only theoretically. The author believes that this treatment is the method of choice in postoperative tetany. In his case the convulsions responded only temporarily to injections of calcium, but after the implantation of a fragment of bone about 6 cm long from 2 to 3 cm wide, and from 8 to 10 cm thick recovery ensued.

EDITH SCHWARTZ MOORE

Babcock, W. W. Plastic Closure of Laryngostomic Fistulae and Enlargement of the Lumen of the Trachea or Larynx by the Implantation of a Chondrocutaneous Flap. *Arch Otolaryngol* 934 iv, 535

It is often difficult to close a high tracheal stoma without producing a secondary obstruction. In the

healing process the divided tracheal cartilages show a tendency to turn inward which is partially counteracted by the traction of cicatricial tissue formed lateral to the opening. As the result of the liberation of the adjacent skin and the tracheal margins, tracheal collapse may occur. When the lumen is small operation may require (1) V shaped resections of cicatricial tissue lateral to the trachea to cause the margins to flare outward, and (2) the use of an inlay graft to enlarge the tracheal opening. It is desirable for the opening to be lined with hairless epithelium and to be stiffened and curved by the introduction of cartilage. A small but sufficient portion of cartilage may be removed by a curved incision placed behind the concha of the ear without causing obvious secondary deformity. Within a few days the sections of cartilage implanted in the subcutaneous tissues become adherent and form a flap which spreads the tracheal margins and maintains the shape of the trachea even in the presence of considerable pressure.

The described method is suggested also to increase the lumen of an obstructed larynx when a stoma is not present. After laryngostomy the implant is inserted between the separated margins of the larynx. Very fine silver or better rustless steel wire is recommended for the suture.

SURGEON PERLOW, M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS CRANIAL NERVES

Lippens, A. and Dejardin, L.: The Value of Encephalography in the Diagnosis, Prognosis, and Estimation of the Residuals of Craniocerebral Injuries (La valeur de l'encephalographie dans le diagnostic, le pronostic, et l'évaluation des reliquats des traumatismes craniocérébraux) *Presse méd.*, Par., 1934 xlii, 455

For estimation of the residual effects of craniocerebral injuries the authors recommend the injection of air followed by stereorontgenography in all four positions. They report on seventy five cases in which this procedure was used without accident. In every case seen from a year to twenty years after the trauma a definite diagnosis could be made from the X ray findings. The discomfort following the injection of air ceases in from twenty four to forty eight hours, the procedure then apparently exerting a sedative action on the previous symptoms.

HALE HAVEN M D

Strauss I. and Savitzky N.: Head Injury Neurological and Psychiatric Aspects. *Arch. Neurol. & Psychiat.* 1934 xxxi, 893.

The purpose of this article is to call attention to methods of investigation which will allow a more accurate differentiation of organic from psychogenic symptoms of head injuries. A review of the history of the diagnosis of head injury is followed by a discussion of the methods of investigation and the post-concussion syndrome.

The diagnosis or exclusion of organic disease of the brain should be based on the findings of a thorough cooperative investigation. In cases difficult to diagnose, neurological psychological, psychiatric, ophthalmoscopic, otoneurological, encephalographic, and spinal fluid studies should be made.

The subjective post traumatic syndrome, characterized by headache, dizziness, inordinate fatigue on effort, intolerance of intoxicants, and vasomotor instability is organic and dependent upon a disturbance of intracranial equilibrium due directly to the blow on the head. In many cases psychogenic factors complicate the clinical picture. It is erroneous to assume the psychogenicity of certain symptoms because of recovery. Organic changes are not necessarily irreversible reactions. The intracranial alterations may be functional in the physiological sense.

DAVID JOHN IMPASTATO, M D

Winkelman N W. and Eckel J L.: Brain Trauma Histopathology During the Early Stages. *Arch. Neurol. & Psychiat.* 1934 xxxi, 956.

Trauma to the brain causes gross and minute histopathological changes. The gross changes are

well known. They include epidural, subdural, subarachnoid, and intracerebral hemorrhage and maceration of the brain. Subarachnoid hemorrhage is the most common finding. The minute changes are more difficult to detect and are not so well known. They include mild congestion mild edema, multiple petechial hemorrhages diffuse or limited gliosis new blood vessel proliferation minute areas of rarefaction phagocytosis of blood pigment by ganglion cells ischemic changes in the ganglion cells disseminated minute areas of softening in the cerebellum with gutter cells disappearance of the Purkinje cells cellular loss in the dentate nucleus, alterations in the subarachnoid space such as small collections of blood corpuscles, especially in the sulci infiltration of phagocytic cells in the pia arachnoid beginning proliferation of connective tissue with young fibroblastic elements and adhesions of the pia to the cortex. The cortical adhesions are said to be the cause of post traumatic headache.

DAVID JOHN IMPASTATO, M D

Karitzky B.: Intracranial Pressure in Cases of Dull Head Injuries (Hirndruck bei stumpfen Kopfverletzungen) *Deutsche Zeitschr. f. Chir.* 1933 cxviii, 1

The former classification of dull head injuries into concussion of the brain followed by recovery with out sequelae due to irritation and contusion of the brain with late sequelae is no longer justifiable. Cerebral pressure is any increase in intracranial pressure. A latent cerebral pressure, such as that which is often at first associated with cerebral tumors may be rendered acutely manifest by trauma. The author cites an illustrative case. The causes of traumatic cerebral pressure are (1) Impression fractures (2) Intracranial hemorrhage, and (3) swelling of the brain following injury of the tissues.

A roentgen examination should be made in every case of cranial injury as otherwise small impression fractures may escape recognition. Only by such an examination will the patient and the physician be protected from unpleasant surprises and will it be possible to determine the compensation correctly. In children, symptoms of concussion of the brain often do not develop as the skull of the child is elastic and therefore is more apt to yield to the intracranial pressure.

Traumatic intracranial hemorrhages always cause signs of cerebral pressure although sometimes these signs do not appear until after a free interval. They consist of vomiting and vertigo due to disturbances of the medulla oblongata and disturbances of the respiration and pulse from pressure on the vagus centers. The diagnosis is not always easy. The author reports a case in which six hours after the

injury during which time there were no symptoms whatever death occurred with tonic convulsions in two minutes as the result of a meningeal hemorrhage. The recognition of increased intracranial pressure in the beginning is difficult. Papilloedema does not occur until later. The claim of Schuch that the blood pressure is also increased could not be confirmed in the author's clinic. While meningeal hemorrhage can be controlled, intracerebral hemorrhage cannot. Intracerebral hemorrhage is an important factor in the disturbances following concussion. Belsake found that renewed hemorrhages may occur many years after the trauma. The author emphasizes the importance of characteristic changes in the eyes—strabismus, oculomotor paresis—and cites illustrative cases.

The cause of general acute cerebral pressure after head injuries is swelling of the brain or so-called hydrocephalus internus or both. Dandy ascribed great importance to internal hydrocephalus, but there is uncertainty as to what is meant by this term. A true dilatation of the ventricle cannot be demonstrated anatomically. The clinical conception is based on an increase in the amount and in the pressure of the cerebrospinal fluid in the spinal canal. The pressure of the fluid is the indicator of cerebral pressure. Increases of pressure (130, 155, and 170 mm) are practically always found in cases of head injury even when there are no other signs of a cerebral disturbance. The author believes it justifiable to assume that the cerebral pressure in dull head injuries is caused by acute local or general swelling of the brain substance, which reacts to its injury (necrosis and degeneration of the ganglion cells) with oedema. However neither macroscopic nor microscopic evidence in support of this assumption has been found as yet. Only in acute cerebral pressure as contrasted with the chronic increased pressure associated with tumors is the time probably too short for flattening out of the sulci and gyri. Therefore it is necessary to rely at first upon the clinical symptoms, which are those of concussion of the brain. Attention is called to the vestibular nystagmus which is practically never absent during the first days. The lumbar pressure may remain increased after years, and sudden death may occur from cerebral pressure after a long period of time. According to Esser's findings, the necrotic foci never heal entirely. Anatomically swelling of the brain is recognizable only when it is pronounced. Reichardt showed that there is a marked flattening of the cerebral convolutions with complete absence of cerebrospinal fluid. The brain substance has a peculiar soft, viscid, and dry character. The author assumes that large quantities of the fluid enter the intercellular substance as no increase in the fluid content of the cells is demonstrable histologically.

Neurologists assume that the swelling of the brain is caused by resorption of the cerebrospinal fluid, but this theory is not supported by the findings of investigations. Brelachowsky found that resorption of the cerebrospinal fluid is markedly inhibited

According to the findings of Magnus and Jakobli in experiments on animals, circulatory disturbances play an important rôle. The author reports an illustrative clinical case. He calls attention to the fact that the pressure of the cerebrospinal fluid is increased while the amount is decreased. In cases of cerebral pressure due to brain tumor the ventricles are so compressed that their puncture is impossible yet the lumbar pressure is increased. The author believes that this is a purposeful reaction. He says,

The encroachment of the initial process on the intracranial spaces results in a latent cerebral pressure. The consequent danger to the medulla is decreased by an increase in the lumbar pressure. When this functional adaptation is no longer sufficient, respiratory death results from pressure on the respiratory center and heart failure results from cardiac asphyxiation.

The treatment indicated for impression fractures and for hemorrhage especially extracerebral hemorrhage, is clear. In the treatment of swelling of the brain the Rehn Clinic has found decompression operations unsatisfactory. It has obtained better results from roentgen therapy although the value of this treatment is disputed. The lumbar puncture repeated at intervals which Pand and Signat have found successful is rejected by the author because, according to the theories he reviews in this article, it may increase the medullary injury. According to the investigations of Weed and Mäckeblom, osmotherapy by the intravenous injection of hypertonic sodium chloride and sugar solutions does not promise very much. The effect weakens after a few hours and the sodium and chlorine ions entering the blood attract more water to the brain.

In prolapse of the brain which is also a result of cerebral swelling, good results have been obtained by surrounding the edges of the cranial defect with layers of iodoform gauze. This lessens the pressure of the brain against the bone edges and thereby prevents the formation of new foci of necrosis. Nothing is said regarding the position or fixation of the head in cases of cerebral prolapse. The article contains several illustrations.

FRANK (2)

Guerci, G.: The Treatment of Wounds of the Superior Longitudinal Sinus (Sopra il trattamento delle ferite del seno longitudinale superiore). *Polidica*. Rome 1934, xli, 322, part 414.

The principal methods of arresting hemorrhage of the sinuses of the dura mater and especially of the superior longitudinal sinus, are digital pressure, forceps pressure, ligation, suture and the application of tampons. Digital pressure is an emergency temporary procedure which must be replaced by one of the other methods. Forceps pressure may be of great service at times because of the rapidity of its application, but as a rule it cannot be applied as the walls of the sinus are rigid and do not lend themselves to such pressure without further laceration. Moreover there is danger of renewed hemorrhage when the forceps are removed.

Ligation should be the method of choice, but in the majority of cases it is impossible because of the rigidity of the vessel walls and the time required to place two ligatures, one at each end of the laceration.

Sutures also require a comparatively long time for their application, and can be used only in cases of linear wounds of the sinus without loss of substance. In cases of jagged lacerations of the sinuses with loss of substance, suturing is impossible because the vessel walls are inelastic. Kevensort's parasinal suture is a suture of the nearby dura instead of the sinus. This also requires a great deal of time and is inapplicable in most cases.

Tampons may be applied either within the sinus or on the sinus. Their internal application a method used by Lister is not employed by modern surgeons. The most common and practical method of arresting hemorrhage from the superior longitudinal sinus is the external application of a tampon. Gauze, catgut fascia, and autoplasmic and heteroplasmic muscle tissue have been used. Paccetto has recently demonstrated that the hemostatic effect of muscle tissue is due mainly to a biological action, and that heteroplasmic muscle is more active than autoplasmic muscle. Fascial and muscle tampons are not always easily obtainable and their application is time consuming. For practical reasons, gauze and catgut tampons are employed most commonly. The action of the tampon consists merely in approximating the lips of the lacerated sinus and allowing the blood to coagulate in its meshes. Pressure plays very little, if any part in the hemostatic effect as the pressure within the sinus is normally very low. Tampons of gauze must be removed after the desired result has been obtained and because of their strong adherence their removal is associated with the danger of causing a new laceration. The author prefers the catgut tampon as catgut may exert the same biological hemostatic action as muscle and, as it is absorbed does not require removal. Catgut tampons may be easily made by dropping thick catgut into hot water. The hot water causes the catgut to swell and become gummy and sticky, a condition in which it can be moulded into any desired shape.

DAVID JOHN IMPASTATO, M D

Malbran J: The Visual Field in Chiasmatic Lesions (Il campo visual en los procesos quiasmáticos) *Seminario med* 1934 VII, 369

Disturbances of vision often give absolute evidence of the presence of an intracranial tumor and its location. The importance of the optic tracts may be greater than that of any other cranial nerves or of all cranial nerves combined.

Bitemporal hemianopsia is caused only by lesions at the optic chiasm. It is pathognomonic of a tumor in this region. The tumor may arise from the hypophysis below from the third ventricle above, or along the stalk of the hypophysis. In the early stages of development of a tumor vision for all colors may be absent in both temporal fields when vision for form is still intact. The bitemporal

loss of vision for color is just as important as loss of all vision in those fields. In the later stages of development of a tumor defective vision may extend into the nasal field.

Binasal hemianopsia is rare and never complete. Aneurisms of the internal carotid arteries or diffuse tumors of this region attack the outer field of both optic nerves and produce incomplete and irregular binasal hemianopsia.

Generalized loss of vision resulting from intracranial pressure may be the result of a growing intracranial tumor. The loss of vision is generally steadily progressive, but may be suddenly intensified by exacerbations in the tumor growth or by retinal hemorrhages.

Scotomata may be unilateral or bilateral. The most important type is the central scotoma in which sharp central vision exists. Occasionally a tumor of the frontal lobe is responsible. Often the lesion is an inflammatory or toxic lesion.

The article contains numerous charts of visual fields, ventriculograms and anatomical illustrations of operative findings. WILLIAM R. MCKEE, M D

Dainelli, M: The Sedimentation Time of the Erythrocytes in Cranio-Encephalic Lesions. Experimental Researches (La prova della velocità di sedimentazione dei globuli rossi nelle lesioni cranio-encefaliche. Ricerche sperimentali) *Clin cher* 1934, X 153

In studies made on rabbits, the author found that lesions of the scalp caused no change in the sedimentation time of the erythrocytes trephining craniotomy, sectioning and removal of part of the brain, and opening of a lateral ventricle caused an acceleration which varied according to the extent of the lesion and staphylococcal infections of the brain, including brain abscess, caused an intense acceleration. Intracerebral injections of from 1/4 to 1 ccm of blood gave variable and inconclusive results.

The article contains an extensive review of the sedimentation time in practically all conditions in which this determination has been made.

DAVID JOHN IMPASTATO, M D

Zander P: Experiences with Trigeminal Neuralgia Especially with Destruction of the Ganglion by the Haertel Method (Erfahrungen bei Trigeminalgia, insbesondere mit der Ganglionverödung nach Haertel) *Arch f klin Chir* 1933 XLVIII 243

The author reports the findings of a follow up of patients he treated for trigeminal neuralgia. Of twenty-eight cases improvement or cure was obtained in fourteen by injections of alcohol, in four by operation and in ten by general measures or local intervention. He states that the mild cases of neuralgia should be treated symptomatically therefore discovery of the cause (encapsulated empyema of the frontal sinus dental disease, hypersensitivity of the gum or jaw and disturbances of the sym-

pathetic nervous system with angioneurotic condition) should receive first consideration. In the cases of hypersensitive and young persons the presence of true neuralgia should always be doubted.

Peripheral interventions have been abandoned today in favor of injections of alcohol into the nerve branches. The author is of the opinion that their rejection is without justification. However he disapproves of paraneural injections of alcohol as he believes it is better to try novocain. He states that in the case of the first and second branches section or avulsion may be tried, but in the case of the third branch these procedures should not be used as they render it impossible to destroy the ganglion by injection. Therefore it is preferable to limit the treatment to blocking of the nerve with alcohol at its exit from the foramen ovale. Of the reviewed cases of severe neuralgia, the alcohol injection was made into the ganglion in all except four in which it was impossible to find a patent foramen ovale. Of ten patients, eight remained cured after from two to seven years and four had a recurrence. Of the latter two became free from pain after a repeated injection. In one, the renewed pain was not a true recurrence as it was in the other half of the face.

Accompanying injurious effects consisted of injuries to the eye (keratitis) and transient paralysis in two cases each. The procedure may sometimes endanger life. In one case an injection was followed by a fatal hemorrhage in the pharynx from erosion of the internal carotid artery. Optic atrophy, paralysis of cerebral nerves, and mental depression have also been reported. The most serious disadvantage of the procedure is the impossibility of determining whether the entire ganglion has been destroyed. However as the method is of value without doubt it should not be repudiated so generally as it is today. Recurrences may develop and secondary injuries (paralysis of the cerebral nerves and keratitis) may occur also in cases treated by operation and in partial interventions there is inherent danger of recurrence. Therefore operation is not an ideal procedure.

In contrast to operation, the injection of alcohol has the advantage that it causes no noteworthy danger to life. It is therefore the method of choice as its disadvantages may be limited by careful technique. The attacks of pain do not increase if the true center of the lesion is struck. If there is uncertainty regarding the position of the needle or if cerebrospinal fluid escapes, the injection should be abandoned. Striking the ganglion in the center is the chief requisite of the procedure. The center is revealed by a peculiarly smooth gliding-off of the needle, a slightly springy resistance to its advance, and immediate cessation of feeling upon the injection of at most 1 ccm of novocain. More than 2 ccm of alcohol should not be given. In a few cases of severe recurrence the author has left the needle in place, secured in its position by Stent's composition, and has repeated the injection after a few hours. It is important not to discharge any

patient in whom at least the area of both of the lower branches is not completely insensitive. It is better not to inject the alcohol intentionally into the first branch. Even when reddening of the eye or dilation of the pupil occurs the injection should be stopped or the needle slightly withdrawn.

In four cases reviewed injection was impossible as a patent foramen could not be found. Operation was therefore necessary. Two of the patients died of meningitis. In one, the meningitis had its origin in a cerebrospinal fluid fistula, and in the other in empyema of the frontal sinuses. The operations were very difficult. In one case there was hemorrhage from the cavernous sinus.

In conclusion the author says that the injection of alcohol should be reserved for severe cases as the absence of feeling in the mouth is very unpleasant. The patient should be warned previously regarding the danger of injury to the eye.

STRECHKEIS (Z)

Zenker R.: The Treatment of Trigeminal Neuralgia by Deep Electrocoagulation of the Gasserian Ganglion by Kirschner's Method (Die Behandlung der Trigeminocuralgie durch Tiefelektrokoagulation des Ganges gasserian nach Kirschner). *Med. Wch.*, 1934, p. 14.

In the treatment of trigeminal neuralgia Kirschner's deep electrocoagulation has all of the advantages and none of the disadvantages of alcohol injection and radical removal of the gasserian ganglion. The nerve ganglion is sought for through the foramen ovale by the use of an instrument devised by Kirschner which facilitates its localization and permits its puncture through the foramen ovale at various angles. This instrument consists of a semi-circular band the axis of which extends through both foramina ovale, and an attached needle. The ganglion is reached after an accurate estimate is made of the position of the foramen ovale partly by means of Martin's callipers (the syzygomatic diameter) and partly with the author's callipers (measuring the distance from the point of the ear to the root of the nose).

The necessary data having been obtained as described, the apparatus is put into place. If all three branches or both of the two lower branches are involved, the inframandibular route is chosen and the needle is held at an angle of 10 degrees with the sagittal plane running through the foramen ovale. If the second branch is involved the internal supra-mandibular route is used with the needle at an angle of 15 degrees. In stubborn neuralgia of the first branch, the external supra-mandibular route is used.

Under rectal anesthesia induced with avertin and supplemented temporarily by Kirschner's new method of inducing avertin narcosis intravenously until full anesthesia is obtained, the ganglion is usually reached without difficulty by one insertion of the spearhead attached to the described apparatus. When the point of the needle lies in the ganglion (stereoscopic plates may aid in its localization) the

trocar mandrin is withdrawn and, by means of an insulated sound inserted in the shaft electrocoagulation is carried out with a 300-ma. current until the milliampere meter ceases to register. By withdrawing and pushing farther the point of the sound, the coagulated area is enlarged. This is advisable especially when several branches are involved. The sound is then withdrawn and 0.2 c. cm. of 70 per cent alcohol is injected into the area with a needle. The alcohol is absorbed by the walls of the cavity and does not infiltrate into the tissue spaces. If the result is not satisfactory, a second and a third treatment may be given during the next few days.

After treatment is not necessary except in cases in which the first branch of the trigeminal nerve has been injected. In the latter the eye is protected by boric acid ointment in the conjunctival sac and an hourglass dressing.

The effects of the operation are immediate and usually permanent. Recurrences are easily controlled.

Of forty-one cases injury to nerves of the eye muscles occurred in two, but were insignificant as compared with the severity of the original malady. In no case did a permanent neuroparalytic keratitis develop. The harmlessness of the procedure permits its use in less severe ailments. KARL ABEL, (Z)

Pons Tortella, E.: The Parotid Plexus of the Facial Nerve (Le plexo parotídeo del facial). *Rev. de cirug. de Barcelona* 1933, 41, 218.

This article is based on eight dissections of the facial nerve. The author says that the descriptions of the intraparotid portion of the facial nerve found in the literature are brief and incomplete.

The intraparotid portion of the temporofacial branch of the facial nerve has a plexiform arrangement due to multiple branchings and anastomoses. The meshes formed are polygonal and have straight edges. The loop arrangement described by others was not found in the author's dissections.

The cervicofacial branch diverges from the temporofacial and usually divides into three branches within the gland. Occasionally it assumes a plexiform arrangement consisting of a few large meshes. The anastomosis between these two branches of the facial nerve takes place between one or more branches of the temporofacial and one branch from the cervicofacial and is located outside the first portion of Stenon's duct. It is usually plexiform and at times very complex. It has been called the parastenonian plexus. It is always intimately connected to the wall of the duct. In some cases fibers pass from it to the walls of the first portion of the duct.

The glandular portion of the facial nerve may be subglandular, intraglandular, intralobular or of a mixed type, depending on the anatomy of the gland.

The parotid plexus of the facial nerve consists of (1) the temporofacial plexus, (2) the cervicofacial branch or plexus and (3) the parastenonian anastomosis or plexus. W. H. MARTIN, M. D.

SPINAL CORD AND ITS COVERINGS

Gilchrist E.: The Relation of the Peripheral Lymphatic System to the Spinal Cord. *Edinburgh M. J.*, 1934, xli, 350.

Experiments were conducted by the author in an attempt to verify the common belief that toxins such as those elaborated by the tetanus bacillus can pass centrally along the lymphatic channels of the peripheral nerves and in this way reach and affect the nervous elements of the spinal cord. The sciatic nerve of rabbits was exposed and a 1-c. cm. suspension of pigment (preferably Russian blue) introduced into the tissues around the nerve trunk and into the trunk itself. Microscopic examination showed that the pigment was carried centrally within the perineurium only about 0.5 cm. from the site of inoculation. In the epineurium the pigment was present in larger amounts. In some of the experiments it had traveled as far as 3 cm.

These findings indicate that particles pass outward from the nerve into the endodural lymph channels and then into the general lymphatic drainage system. Apart from artefact no pigment was ever found between the nerve fibers as they passed through the dura mater or in the subdural spaces or between the tract fibers in the spinal cord.

Gilchrist concludes that bacteria of such size as to be within the range of microscopic vision do not commonly reach the spinal cord or its meninges by the lymphatic channels related to the peripheral nerve trunks. ROBERT ZOLLINGER, M. D.

Chiasserini A.: Therapeutic Procedures in Cases of Paraplegia from Lesions of the Spinal Cord Following Vertebral Fracture. Radiculo-Intercoastal Anastomoses (Tentativi di cura in casi di paraplegia da lesione del midollo lombare consecutiva a frattura vertebrale. Anastomosi radiculo-intercostale). *Polisid.*, Rome 1934, xli, sex part. 603.

Following a review of the various procedures used in the treatment of paraplegia following injuries of the spinal cord the author reports two cases in which he succeeded in anastomosing the last two intercoastal nerves with ramus of the cauda equina. As at the time of the publication of this report the cases had been followed only two months, the end results could not be determined. In one patient, however, the urinary incontinence ceased after the operation. PETER A. ROSS, M. D.

PERIPHERAL NERVES

Lhermitte J. and Trolles, J. O.: Peripheral Neurolymphomatosis in Man (Neurolymphomatose périphérique humaine). *Presse méd. Par.*, 1934, xlii, 289.

The case reported was that of a woman sixty-seven years of age who presented the clinical picture of degenerative changes in the motor and sensory nerves of the forearm and hand. Microscopic examination

disclosed no inflammatory or degenerative lesions, but a bilateral and symmetrical infiltration of the median nerve by cells of the lymphoblastic type. The condition was therefore a lymphoblastic infiltration strictly localized in a part of the peripheral nervous system.

The findings suggested at first a very atypical leukemia. It has long been known that the myeloid and lymphatic leukemias may affect the central nervous system, but if there are any cases in which they affect the peripheral nerves such cases are extremely rare. There seems to be no human disease heretofore described that presents a picture exactly like that in the case reported in this article.

However, birds, most frequently domestic fowls, sometimes develop a disease that presents exactly the same picture except that the infiltration is not limited to the peripheral nerves but extends to also the internal organs. The author believes that neurolymphomatosis gallinarum and human neurolymphomatosis are the same disease, and that human forms will be discovered in which the infiltration extends to the central nervous system or the viscera.

The cause of the disease is obscure. Experimental work indicates that it is infection, but the virus has not been identified. **AUDART GOSS MORGAN, M.D.**

SYMPATHETIC NERVES

Goebell, R.: Sympathectomy and Excision of the Vagus Nerve in Bronchial Asthma. (Ueber Sympathektomie und Vagusedurchtrennung bei Asthma bronchiale.) *Zentralbl. f. Chir.*, 933 p. 66.

Ten years ago Goebell performed his first bilateral sympathectomy for asthma and, in spite of

the very severe symptoms, achieved good results. In this article he reviews his successful operations and his failures.

At first he operated only in the most severe cases. As he did not regard age irremediable emphysema, or chronic bronchitis as contra indication, the permanent results became much worse during the first few years. Since 1926 he has operated only on patients under sixty years of age. His youngest patient was eleven and one-half years old. In 110 bilateral sympathectomies the mortality was 5 per cent. Goebell attributes 1 death to pernicious narcosis. In the other cases ether narcosis, and later local anesthesia was used and, when possible, the operation was done in 2 stages separated by an interval of two weeks. Still later avertin narcosis, also in addition to local anesthesia, was used. Since 1930 there have been no deaths.

Of the 110 bilateral sympathectomies, 98 were done for asthma. Goebell agrees with Kuemmel that unilateral sympathectomy alone without vagus resection on the right side does not yield permanent results. Better results are obtained by unilateral sympathectomy with vagus resection (cure in 41 per cent of cases). Still better are the results of bilateral sympathectomy (cure in 43 per cent and improvement in 30 per cent of cases) and those of bilateral sympathectomy with vagus resection (cure in 42.9 per cent and improvement in 18 per cent of cases).

As a differentiating characteristic Goebell stresses the occurrence of discomfort during the night in cases of bronchial asthma and the occurrence of discomfort during the day in cases of emphysema and chronic bronchitis. **PURVIS (Z)**

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Malliniak, J. W.: Asymmetrical Breast Deformities.
Ann Surg 1934 **xcix**, 743

Slight asymmetry of the breasts is common. It is generally manifested at puberty when rapid development of the breasts begins. Malliniak considers only pronounced asymmetries. These may be divided into the following four types: (1) unilateral hypertrophy with the breast on the other side apparently normal; (2) bilateral asymmetrical hypertrophy; (3) unilateral underdevelopment or overdevelopment; and (4) hypertrophy of one breast with underdevelopment of the other. The first type is the most common.

In all of the five cases of asymmetry reviewed by the author the asymmetry was manifested in early adolescence and increased with age.

Normally the physiological and anatomical changes occurring in the breasts at puberty are influenced by hormones of internal secretions. Therefore it is readily conceivable that the development of the breasts can be accelerated or retarded by an excess or deficiency of these hormones. However while this would explain a bilateral overdevelopment or underdevelopment it does not account clearly for unilateral abnormalities.

Prenatal maldevelopment may be a factor in breast asymmetry. It appears possible that micro-mastia and amastia are caused by a disturbance of the embryonic germ. As a rule these malformations are associated with other abnormalities of the cutaneous, muscular and osseous tissues of the thoracic wall and the upper extremity and frequently with a correspondingly deficient development of the reproductive organs, especially the ovaries.

Trauma caused by the excessive pressure of tight brassieres may be a contributing factor in the undue development of the larger breast. In one of the author's cases cystic fibromata were responsible for a rapidly increasing bilateral asymmetrical hypertrophy. In two cases the changes of pregnancy were approximately normal but nursing of the child was impossible because of qualitative and quantitative insufficiency of the milk.

The more marked deformities cause constant distress. In some cases discomfort is produced by the weight of the breasts. The deformities prevent participation in sports and the wearing of bathing suits and evening clothes.

The treatment of choice includes transposition of the reduced gland and nipple with insertion of the nipple into a new opening made higher up. In bilateral cases the measurements adopted for the reconstruction are arbitrary and equal on both sides.

In unilateral cases the breast operated upon must be made to agree in size and form with the apparently normal breast. Care must be taken to prevent injury to the blood supply of the breast by excessive tension or the excision of too much glandular tissue at one time. The excessive removal of tissue in one stage is particularly dangerous on the sides, where the main blood supply may be cut off from the remaining gland to a considerable extent. Malliniak therefore advises a two-stage procedure since at each operation either the external or the internal portion of the gland may be left intact to preserve part of the main blood supply. This precaution eliminates the danger of sloughing of the skin and nipple.

When the skin covering cannot be provided in its entirety by the anterior flap without producing tension about the nipple, the posterior incision should be placed above the submammary fold. This procedure makes it possible to use part of the skin from the posterior aspect of the breast. A disadvantage is the fact that the linear scar is then visible under the areola instead of being concealed in the submammary fold.

THOMAS W. STEVENSON, JR., M.D.

Gabrielli, S.: A Contribution to the Histology of Tumors of the Breast (Contributo alla istologia dei tumori mammari). *Istw ital di chir* 1934 **xlii**, 71.

This article is based on 389 cases of tumor of the breast in which the tissue removed at operation was examined microscopically. The cases included 1 of pure fibroma, 9 of sarcoma, 96 of fibro-epithelial tumor (66 of fibro-adenoma and 30 of adenofibroma), 34 of fibrocystic disease (7 of which showed evidence of malignant change), 14 of papillary fibrocystic disease, 226 of carcinoma, 7 of endothelial tumor, and 2 of perithelioma. Eight of the tumors occurred in male breasts.

Gabrielli discusses both the common and the unusual aspects of each type of tumor and directs attention especially to fibrocystic disease which he regards as a precancerous lesion.

He next takes up the relation of the structure of the tumor to metastasis and recurrence. He states that both of the latter are proportional to the cellularity of the tumor.

In conclusion he discusses cancer of the male breast.

EGBERT T. LEECH, M.D.

Oliver, R. L. and Major, R. C.: Cyclomastopathy: A Physiological Conception of Some Benign Breast Tumors, with an Analysis of 400 Cases. *Am J Cancer* 1934 **xv**, 1.

The term cyclomastopathy is applied by the authors to the entire group of breast affections

which present excessive connective tissue or epithelial proliferation or both in response to growth stimuli or as a manifestation of abnormal involution following normal response. The term *eccydomastoma* is suggested to designate localized areas of cystic mastopathy which give rise to palpable masses or to symptoms. The authors are of the opinion that *eccydomastoma* occurs more frequently in white women than in colored women. It reaches its highest incidence between the ages of twenty and twenty-five years, the age at which fibro-adenoma and intra-canaliculal myxoma are most frequent. No conclusion regarding the influence of the marital status upon the incidence of *eccydomastoma* can be drawn. It is twice as common in women who have borne children, that is, whose breasts have undergone lactation hypertrophy than in women who have not borne children. Although no portion of the breast is exempt it occurs most frequently in the upper outer quadrant. The outstanding sign is a lump in the breast. This occurred in 83 per cent of the cases reviewed. Pain occurred in 35 per cent and pain beginning or becoming intensified at the time of the menstrual periods occurred in 15 per cent.

The average duration of the condition in all cases was thirty-six months. There was no significant racial difference. Mobility of the mass was reported in only 56 per cent of the cases. In 15.75 per cent of the total number the masses were multiple, involving one or both breasts. In 5.7 per cent, the mass occurred in a generally lumpy breast. Dimpling of the skin was observed in 11 cases, and retraction of the nipple in 9 cases.

The importance of the changes occurring in the breasts at puberty in connection with the production of *eccydomastoma* and the possibility that many *eccydomastoma* discovered late in life date from the time of puberty have been emphasized. Hypertrophy of breast tissue may be grossly unilateral or bilateral diffuse or isolated and, if isolated, single or multiple in one or both breasts. It may consist of epithelial or connective tissue hyperplasia or any combination of the two. Connective tissue hyperplasia may be interlobular or intralobular or both.

Encapsulation has been found to be a mechanical phenomenon without a significant relationship to the pathology of *eccydomastoma*. The authors believe that encapsulation is never entirely complete, and that the affected areas maintain a connection with the remainder of the gland through their ducts. The general lack of uniformity in the microscopic appearance throughout the affected areas has been emphasized. Efforts to find a constant association between any particular type or consistency of connective tissue or any type of epithelial hyperplasia and the rapidity of growth, the duration of the mass, and the age of the patient have been fruitless. It has been found that all of the microscopic appearances commonly associated with chronic cystic mastitis—single and multiple cysts, papillary cystadenoma or Schimmelbusch's disease, dilatation of ducts and acini, desquamation, and the assumption of a columnar

form and acidophilic staining—may be presented in these benign areas of *eccydomastoma*. The evidence of response on the part of breast epithelium and connective tissue to hormonal stimuli, in the elaboration of which the ovary and anterior lobe of the pituitary gland must play a part, has been accepted. A second variable factor and potential pathogenic agent has been postulated, namely lack of uniformity of tissue behavior in response to stimulation. A relationship between *eccydomastoma* and carcinoma has been denied. There may be a slight tendency on the part of these masses to undergo arcomatous change.

JOSEPH K. NARAT, M.D.

Greenough, R. B., and Taylor, G. W.: Cancer of the Breast: End-Rosults, Massachusetts General Hospital 1921-1922, and 1923. *New England J. Med.* 934 ccx, 831.

This report is based on 197 cases of carcinoma of the breast suitable for study (177 primary cases and 20 cases of recurrence after a previous operation) which were included among a total of 238 cases in the hospital during the period for which the study was made. As used by the authors, the term "cure" is applied to cases in which the cancer was proved by histological examination and there was no evidence of recurrence for a minimum period of five years after operation. Cases in which death occurred within the five-year period without evidence of recurrence are omitted as inconclusive. When death occurred after five years without evidence of disease the result is classified as a "cure," whereas when death occurred after five years with recurrence the result is classified as a failure.

In the total number of cases entering the hospital including primary and recurrent cases, those treated by radical or palliative operation, and those not operated upon at all the incidence of five-year "cure" was 29 per cent. In 177 cases of primary cancer of the breast, including advanced and inoperable cases, it was 32 per cent in primary cases of the so-called operable class (no disease evident beyond the axilla) it was 34 per cent and in the early favorable cases in which the axillary glands were found free from disease on pathological examination it was 62 per cent.

One hundred and forty-five radical operations were performed. Radical operation includes removal of the whole breast, the skin over the breast, both pectoral muscles, the axillary contents to the clavicle, and the deep fascia from the sternum to the latissimus and from the clavicle to the epigastrium. Of the cases operated upon radically, a five-year "cure" was obtained in 51 (36 per cent).

In the cases of patients under the age of forty-five years, the incidence of "cure" was 23.5 per cent. In those of patients between the ages of forty-five and sixty years, 40 per cent and in those of patients over sixty years of age 45 per cent.

As prophylactic X-ray therapy was employed almost routinely in this series of cases, the authors believe that the improvement in the results over

those obtained in previous series of cases may have been due in part to this treatment. They state however that a final conclusion regarding the value of prophylactic X ray irradiation is scarcely justified by the statistics as yet available.

EARL O LATIMER, M.D.

Simmons, C. C., Taylor, G. W., and Wallace, R. H.: Cancer of the Breast: End Results, Massachusetts General Hospital 1924-1925 and 1926. *New England J. Med.* 1934, ccc, 836

The authors used the same criteria in determining "cure" as the surgeons reporting the end results of cancer of the breast in the same hospital for the three years preceding this report. Also they apply the term "radical operation" to the surgical procedures to which it was applied in the preceding report.

In all of the earlier series the ratio of cases without involvement of the axillary glands to those with lymph node involvement remained about the same. This series shows a slightly larger proportion of early cases. As a whole the figures indicate some improvement and suggest that patients are seeking advice for tumor of the breast at an earlier stage of the condition.

Of the total of 167 patients in whom the disease was confined to the breast and axilla, 69 (40.9 per cent) are known to be living and free from disease five or more years after the operation. The incidence of five year cure was therefore approximately 7 per cent higher than in the preceding three years. There was 1 postoperative death due to pulmonary embolism on the eighteenth day.

A radical operation was performed in 158 of the 167 cases and an incomplete operation in 9. Five of the 9 patients with an incomplete operation are "cured." Two of them were seventy five years of age, and in 2 a small area of carcinoma was found microscopically after simple amputation for what was believed to be cystic disease. In 1 the lesion was of medium malignancy and found in the glands removed from the lower portion of the axilla. Three of the patients who died of recurrence and two of those living received prophylactic postoperative high voltage X ray treatment.

Of 66 cases in which the disease was confined to the breast, "cure" was obtained in 43 (64 per cent) and of 101 cases in which the axilla was involved, "cure" was obtained in 26 (26 per cent).

The results of operation for cancer of low malignancy with involvement of the axillary glands were better than those of operation for cancer of medium malignancy limited to the breast. The incidence of "cure" varied relatively little in the different decades. Prophylactic irradiation as given to this group of patients did not influence the end results of operation.

The authors are of the opinion that if exploratory incision is performed carefully it will not cause dissemination of the disease. They believe also that over 11 per cent of the patients living without

evidence of disease five years after operation will subsequently die of recurrence.

EARL O LATIMER, M.D.

TRACHEA, LUNGS, AND PLEURA

Kampmeier, R. H.: Thrombosis of the Main Branches of the Pulmonary Artery. *J. Thoracic Surg.* 1934, iii, 513

The author reviews twenty three cases of thrombosis of the main branches of the pulmonary artery which have been reported in the literature and reports a case of his own in detail. He states that the condition produces a definite syndrome, but associated pathological conditions, such as cardiac disease make interpretation of the symptoms difficult and uncertain.

Thrombosis of the main branches of the pulmonary artery causes progressively increasing dyspnea going on to orthopnea. It may or may not be associated with cough. Chest pain is often present. The outstanding sign from the onset is cyanosis. This becomes more and more intense as the condition progresses. In the author's case the cyanosis was so intense that at times the patient was almost black. Hemiplegia, aphasia, and paresis of the facial muscles are common. Cardiac enlargement and failure of the right heart may occur. Of interest and importance is the rarity of abnormal physical findings in the lungs. The patient may survive for years.

J. DANIEL WILLIAMS, M.D.

Drastich, L., Adams, W. E., Hastings, A. B., and Compere, C. L.: The Effect of Exercise on the Acid Base Balance and Oxygen of the Blood Following Atelectasis and Pneumectomy. *J. Thoracic Surg.* 1934, iii, 341

The authors carried out experiments on dogs to determine the extent to which these animals could adjust themselves to conditions placing severe strain on their respiratory apparatus after up to 50 per cent of their lung tissue had been rendered functionless.

Some of the dogs were subjected to partial collapse of the lung corresponding to the functional removal of approximately one half of the lung tissue, and the others to partial pneumectomy.

The reduction of the efficiency of the respiratory apparatus under strain was measured by the amounts of oxygen and carbon dioxide carried in the blood. The types of exercise used were (1) running on a horizontal treadmill (2) swimming in water at a temperature of 30 degrees C. and (3) swimming in water at a temperature of 40 degrees C.

When 50 per cent of the lung tissue was inactivated the moderate exercise of running on a treadmill and the somewhat more strenuous exercise of swimming in water at a temperature of 30 degrees C. did not embarrass the organism to any appreciable degree. However the vigorous exercise of swimming in water at a temperature of 40 degrees C. resulted in an increased fixed acid production which the authors interpreted as indicating that the tissues

were receiving a less than normal supply of oxygen and that oxidation was incomplete. The elimination of carbon dioxide appeared to proceed with normal efficiency except in the cases of the dogs subjected to inactivation of as much as 70 per cent of the lung tissue.

The acid-base changes in the blood in the most severe form of exercise were much more marked in the dogs subjected to partial collapse of the lung than in those subjected to partial pneumonectomy—an observation suggesting that a considerable portion of the blood flowed through the atelectatic tissue.

J. DANIEL WILLIAMS, M.D.

Sergeant, E. Kourilsky R., and Laumay C. Therapeutic Results of Surgical Operations on the Phrenic Nerve in Tuberculosis and Bronchopulmonary Suppurations (Résultats thérapeutiques des interventions chirurgicales sur le phrénique dans la tuberculose et les suppurations broncho-pulmonaires) *Arch med-chir de l'appar respir* 934, 15, 45

In this article, which is preliminary to two later articles in which the authors present their statistics with regard to the therapeutic results of phrenicectomy, the complications of the operation are discussed.

The authors state that during phrenicectomy in cases of large bronchopulmonary abscesses death may occur suddenly on the operating table as the result of asphyxia due to a sudden reflux of pus into the other lung when the nerve is excised. Also in cases of bronchopulmonary abscess, suppurative or non-suppurative bronchopneumonic infection may occur on the side on which the operation was performed or on the other side. This is caused by large bronchial emboli. It may develop immediately or within a few days after the operation.

In pulmonary tuberculosis further development of the disease may take place after the operation on either the same or the other side.

Immediate hæmoptysis may be caused by the effect of the operation on the pulmonary circulation. This complication is most apt to result in pulmonary tuberculosis, but may occur also in bronchopulmonary suppuration. It is rather rare.

Another possible complication is pyopneumothorax. This may or may not be putrid. It is caused by rupture of pleural adhesions resulting from the traction produced by the elevation of the diaphragm and the accompanying broadening of the thorax. It may occur in tuberculosis and in bronchopulmonary suppuration. ARTHUR GORE MORGAN, M.D.

Sergeant, E., and Laumay C.: Therapeutic Results of Surgical Operations on the Phrenic Nerve in Pulmonary Tuberculosis (Résultats thérapeutiques des interventions chirurgicales sur le phrénique dans la tuberculose pulmonaire) *Arch med-chir de l'appar respir* 934, 15, 44

The authors state that they never practice phrenicectomy or alcoholization of the phrenic nerve

except in cases in which pneumothorax fails. They believe that pneumothorax is greatly to be preferred if it is possible.

Since 1924 they have performed sixty-eight operations on the phrenic nerve and have followed the patients up for at least a year after the operation. The average follow-up period was three years. Nine of the patients are dead, nine may be considered cured, and fifty still have lesions that are more or less progressive. Of the latter twenty-seven showed considerable improvement for some months after the operation, but later their lesions began to progress again.

Of the nine cured patients, five had isolated, cold, and recent cavities of the type most greatly benefited by sanatorium treatment. While it is possible that these patients would have recovered under sanatorium treatment alone, the authors believe that the phrenicectomy was a factor in the very rapid disappearance of the cavities.

Whether the treatment consists of phrenicectomy or pneumothorax, the results are much more favorable if, as in most of the authors' cases in which recovery resulted, the patient is able to go to a sanatorium promptly.

Three of the authors' patients who were cured had subacute or cold infiltrations with involvement of the pleura. Improvement in their condition took place slowly. The roentgenogram shows sclerosis of the lung with considerable retraction on the side of the operation. In the last case the infiltration was more acute and more recent.

Phrenicectomy was absolutely ineffective in cases of large apical cavities and acute purulent infiltrations. In cases of diffuse infiltrations the operation often seemed to arrest the process for a while. The fever fell and the patient gained weight. Ultimately however the process began again. It is therefore necessary to keep the patient under observation for several years.

In treatment by alcoholization, it is impossible to control the length of time that the paralysis persists. A roentgen examination should therefore be made every month and this is often impossible in the case of hospital patients. ARTHUR GORE MORGAN, M.D.

Sergeant, E., and Kourilsky R.: Therapeutic Results of Surgical Operations on the Phrenic Nerve in Bronchopulmonary Suppurations (Résultats thérapeutiques des interventions chirurgicales sur le phrénique dans les suppurations broncho-pulmonaires) *Arch med-chir de l'appar respir* 934, 5, 40

The authors have performed twenty-five operations on the phrenic nerve in bronchopulmonary suppurations—phrenicectomy in twenty-three cases and alcoholization of the nerve in two cases. They find from their results that phrenicectomy is absolutely contra-indicated in cases of putrid abscesses with inflammation, particularly if the abscesses are on the left side in either the upper or the lower lobe. In cases of putrid abscesses that are not very active,

particularly those in which the abscesses are in the right middle lobe, phrenicectomy may bring about remissions not exceeding three months in duration. It cannot be considered a truly curative method for putrid abscess. It is generally ineffective and it may be dangerous. There is risk of allowing the most favorable time for surgical operation to pass. In cases of isolated cylindrical bronchiectases of the left lower lobe phrenicectomy may bring about temporary improvement but in cases of abscess it is more apt to hasten the course of the disease than to effect a cure as it seems to activate acute inflammatory processes.

Its mode of action is not very clear, but a comparison of its immediate effects with those of limited thoracoplasty shows a curious resemblance as both procedures are followed by temporary arrest of the expectoration and a tendency toward diffusion of the inflammation. Therefore it is probable that both operations have a mechanical effect consisting in partial immobilization of a portion of the side of the thorax operated upon and compression of the adjacent lung. AUBREY GOSWOLD M.D.

Anspach, W. E.: Atelectasis and Bronchiectasis in Children: A Study of Fifty Cases Presenting a Triangular Shadow at the Base of the Lung. *Am. J. Dis. Child.*, 1934 xlvii 1011

The author explains the significance of the early triangular basal pulmonary shadow seen in the roentgenograms of the chests of children who later develop bronchiectasis. He recognizes this shadow as indicating a preceding atelectasis of the lower lobe. This article is based on fifty cases, twenty of which are reported with illustrations.

The small well-defined, dense shadow described is a right angled triangle. The mesial border or altitude, and the inferior border or base, are indistinguishable from the shadows of the spine and the leaf of the diaphragm, respectively. The well defined lateral border or hypotenuse, extends from the hilus of the lung to a variable point on the diaphragm. The mesial portion of the shadow is partly obscured by the cardiac shadow because the heart, diaphragm and other adjacent structures are drawn toward the involved side. In lateral roentgenograms this density is seen as an isosceles triangle with its apex at the hilus and its base on the diaphragm.

The author has observed this atelectatic bronchiectatic process of the lower lobe through correlation of autopsy roentgenological and clinical studies throughout life in some cases and from infancy to puberty in others. The clinical history is quite typical. At the onset there are frequently symptoms and signs suggesting a short siege of pneumonia (collapse) followed by slight fever or a sub-normal temperature and frequently a non-productive cough persisting for weeks. Later the cough becomes productive and is especially marked when the patient awakens. Acute exacerbations of fever may be associated with secondary involvement of adjacent tissue. In the absence of drainage of the

bronchi, dilatations are formed sooner or later within the triangular density. Ultimately the clinical and roentgenological picture of bronchiectasis, as noted in older subjects, makes its appearance.

Atelectasis of the lower lobe was present in all of the reviewed cases that came to autopsy. In every case a thick, gummy exudate which could be removed only with difficulty was found filling the lumen of the smaller bronchi. With rare exceptions, atelectasis accounted for the small triangular area of density in young children in whom the delicate tissues and the small caliber of the bronchi favored obstruction by tenacious infected secretions. After studying the pictures seen at autopsy and observing other apparently similar cases over long periods, the author has come to the conclusion that a mechanical obstruction accounts for most, if not all cases of persisting lobar atelectasis producing a triangular shadow at the base of the lungs. This shadow with the displacement of the surrounding structures toward it—in contrast to the displacement of these structures away from the shadow of fluid in the pleura or mediastinum—represents the lower lobe in various degrees of collapse.

In infancy a persistently collapsed lobe becomes an overwhelming burden because the bronchial lumina are unusually small and when they are occluded by highly viscous material sufficient force to clear them is lacking. A better evacuating mechanism probably accounts for the less frequent occurrence of persistent collapse later in childhood and its extreme rarity in adults. In all of the author's cases in which the shadow was acquired during the first year of life death resulted. All of the cases that came to autopsy were considered as showing acquired atelectasis, but did not show dilated bronchi. In the children who continued to live changes in the triangular shadow appeared later and bronchiectasis developed.

The character of the density of the triangle was observed to have a direct bearing on the rapidity with which bronchiectasis developed. If the shadow was small and of fluid-like density and remained of that character bronchiectasis developed rapidly. If the density disappeared and recurred at frequent intervals, dilatations did not develop or were very slight. If air entered the collapsed lobe early the triangular shadow fluctuated in size and was larger and less dense in proportion to the amount of inflation. If postural drainage was instituted early these fluctuating triangular densities, even though present for years did not always bring about bronchial dilatation. The triangular shadow is not pathognomonic of bronchiectasis. When outlined by opaque oils the triangular patterns are frequently seen in adults with bronchiectasis and appear to be acquired rather than congenital.

The success of bronchial drainage at a single stage of the process can be measured by the decrease in density and the increase in the size of the triangular shadow or its disappearance and the return of the cardiac shadow to a more nearly normal position.

When there has been frequent fluctuation in the size and density from the onset of the early acute symptoms, slight or no bronchial dilatations have occurred, even when bronchiectasis was thought clinically to have been present for years.

Early and frequent drainage of the bronchi is essential if the development of bronchiectasis is to be prevented. The prognosis can be determined more accurately by observing the behavior of these shadows at successive roentgen examinations.

MAURICE MEYERS, M.D.

Dalla Torre, G.: Pneumothorax Treatment of Pulmonary Gangrene (Il trattamento pneumotico della gangrena polmonare). *Feldia* Rome, 1934, xi, sez. med. 57.

The author reviews more particularly the literature of the last two years, especially the Italian and French, to show that there is still a great difference of opinion regarding the advisability and efficacy of pneumothorax treatment in pulmonary abscess. Most surgeons hold the method in disfavor.

The collapsed lung after pneumothorax in pulmonary gangrene has seldom been subjected to histological study. The author made such a study and compared the findings in the collapsed lung with those in the unaffected lung. In the diseased lung he obtained sections from the gangrenous excavation, the adhesions, the hilus, and the hilar lymph nodes. He studied five cases in which pneumothorax was induced and one case in which this treatment was not applied. He reports the important details of each case. The duration of the pneumothorax and the time elapsing between the development of the disease process and the institution of the pneumothorax treatment varied in these cases, a fact of prime importance.

The rôle of connective tissue in the healing of tuberculous foci is well established. In the cases reviewed there was an appreciable development of connective tissue especially in the subpleural regions, the vascular adventitia, and the gangrenous foci. In the gangrenous foci there was often the development of a new peculiar lining resembling a highly vascular granulation tissue. The presence of inflammation and the continued collapse of the lung with the subsequent relative collapse of the lymphatics and smaller blood vessels play an important rôle in determining the amount of new connective tissue formed. From his studies with silver impregnations, Antoniazzi concluded that this new connective tissue formation resulted from metaplasia of collagenous tissue of the alveoli, histiocyte proliferation, and especially perivascular proliferation.

In a general way the elastic tissue in the collapsed lung showed signs of degeneration and disintegration and in some places slight hyperplasia due probably to the toxic products of the gangrene as well as the changed physical condition of the lung. The alveolar lumen showed a fairly constant change, being reduced in the hilar regions and dilated in the

subpleural regions, and contained many macrophages and mononuclear cells. The blood vessels were moderately dilated and congested especially the veins and capillaries, some of which were newly formed.

In many respects the pathologico-anatomical and histological changes were similar to those occurring in lungs collapsed because of tuberculosis and neoplasia. In pulmonary gangrene the degenerative process in the elastic tissue definitely predominates.

In the course of four years the author had the opportunity to study forty-three cases of pulmonary gangrene clinically. Of twenty-one patients treated by pneumothorax, ten recovered. The ages of the patients ranged from thirty-two to sixty-seven years. The time of the institution of the treatment varied from fifteen days to four months after the onset of the disease, and the duration of the collapse from one to five months. The location of the lesion has a questionable influence. From these observations the author concludes that pneumothorax is a most valuable method of treating many cases of pulmonary gangrene. Its therapeutic action is probably based on mechanical hindrance to diffusion of the gangrenous process and the passage of toxins into the circulation from the compression of the cavity. The treatment should be continued for months. Following recovery the patients are more susceptible to pulmonary infections. A residual condition, such as bronchiectasis, may be treated later.

A LOREN ROSE, M.D.

Bronfin I.D.: Primary Carcinoma of the Lung Simulating Pulmonary Tuberculosis. *Colorado Med.* 1934, xxxi, 193.

In fourteen years of practice in tuberculosis sanatoria the author encountered only nine cases of primary carcinoma of the lung. In four cases there were symptoms simulating pulmonary tuberculosis and in two cases tuberculosis was associated with the carcinoma. The author believes that preceding inflammatory conditions of the lung, notably influenza and tuberculosis, are not important factors in the development of pulmonary carcinoma. In some of the cases reviewed the onset of the symptoms was insidious and the disease pursued a benign course for some time.

Bronfin emphasizes the possibility of treating bronchial neoplasms successfully by irradiation, as reported by Pancoast and his associates. In the diagnosis, roentgenological and bronchoscopic examinations are of aid but have definite limitations. Cerebral symptoms in the case of a patient suffering from obscure pulmonary symptoms should always arouse the suspicion of malignancy of the lung.

JOHN H. GARLOCK, M.D.

Fried B.M.: Bronchiogenic Cancer: Treatment with Roentgen Rays. *Am. J. Cancer* 1934, xxi, 701.

Fried reports two cases of carcinoma of the lung which were treated with the roentgen rays. In the

first case the condition began at the age of twenty five years and death resulted seven years later. Autopsy showed that extension had occurred by way of the lymphatics. In such cases cancer cells invariably enter the blood stream, but as a rule are destroyed there whereas they thrive in the lymph circulation.

In the author's second case there was a tumor of the left apex with Horner's syndrome, a dense shadow in the apex, oedema and dilatation of the veins of the left arm and chronic pulmonary osteoarthritis. Microscopic examination showed the tumor to be of bronchial origin.

Pancoast described as a new entity superior pulmonary sulcus tumors i.e. tumors located in the thoracic apex which do not arise in the lung, pleura, ribs, or mediastinum. Fried is of the opinion that tumors in the thoracic apex do not constitute a clinical entity. He states that Horner's syndrome may be associated with apical tuberculois or paralysis of the phrenic nerve or brachial plexus.

X ray therapy had no effect in either of Fried's cases, although in the literature there are reports of cases in which it was believed to have lengthened the patient's survival by from three to five months. Its palliative effects are reduction of the cough and discomfort, slowing of the accumulation of fluid and general clinical improvement.

Fried urges more critical judgment of the results of X ray treatment because of the natural remissions which may occur in the course of carcinoma of the lung, the occurrence of selective sensibility to the roentgen rays, and the variations in the duration of lung cancer.

HARRY C. SALTSTEIN, M.D.

HEART AND PERICARDIUM

Lymburner R. M.: Tumors of the Heart. A Histopathological and Clinical Study. *Canadian M. Ass. J.*, 1934, xix, 368.

Lymburner's discussion of tumors of the heart is based on a study of the clinical and autopsy records of 53 cases of secondary and 4 cases of primary tumor of the heart discovered at autopsy on 550 subjects.

Primary tumor of the heart is found in about 0.05 per cent of cases coming to autopsy. While the majority of primary cardiac tumors are benign, about 25 per cent are malignant. The most common primary tumor of the heart is the myxoma. Next in frequency are the sarcoma and rhabdomyoma. Other primary neoplasms found in the heart are fibromata, lipomata, angiomata and carcinomata. Carcinoma of the heart is probably secondary as a rule.

Secondary malignant lesions of the heart are discussed at autopsy in about 0.6 per cent of cases. Metastasis to the heart comes from various organs of the body in which malignant change is commonly found. The incidence of cardiac metastasis is relatively higher when mediastinal structures are involved. The right side of the heart is involved by secondary neoplastic growths more frequently than

the left side. This may be explained on the basis of the blood vessels.

There are no definite pathognomonic signs or symptoms of heart tumor. However, a tumor of the heart is strongly suggested by the sudden and unexpected onset of cardiac symptoms which are progressive and regressive, especially if these are accompanied by an evanescent cardiac murmur and by cardiac failure which does not respond to digitalis. Metastatic tumors of the heart have been diagnosed and, on rare occasions, primary cardiac neoplasms have been suspected, on the basis of the clinical findings.

ESOPHAGUS AND MEDIASTINUM

Lotheisen G.: The Treatment of Organic Stenosis of the Esophagus and Cardiospasm (Behandlung der organischen Stenosen des Oesophagus und des Kardiospasmus). *Munchen med. Wochenschr.* 1934, l, 41.

Structures of the esophagus are either organic or spastic stenoses. The former are due either to scar formation or a benign or malignant tumor. First among the treatments of strictures is gradually increasing dilatation of the scar with sounds. The author has treated about 400 cases by this method with excellent results. The length of time the treatment must be continued can never be predicted. It depends more upon the position of the stricture and the rigidity of the scar than upon the location of the scar. Sometimes there are several stenoses one below the other. In such cases the upper stenosis must be dilated first and then the others in succession until they are all of the same width when all of them should be dilated further at the same time. In cases of very tight stricture the most difficult part of the treatment is finding the correct path when the first sound is used. This is aided by circular electrolysis with the esophagoscope and the chemical test with ferrous lactate and potassium ferricyanide as used by Lotheisen to determine whether the lumen is open. In cases of very tight stricture a gastric fistula should be formed in order that the patient may receive sufficient nourishment. The finding of the guiding thread in the stomach in treatment by dilatation is facilitated by retrograde esophagoscopy through the gastric fistula. If it is impossible to get through the stenosis by any means, a plastic operation on the esophagus is indicated. The author was able to enter the stomach in all of the cases he has treated during the past ten years, although in some of them only after great difficulty.

Organic stenoses of the second type are those due to tumors. The tumors are very rarely benign. The diagnosis and differential diagnosis can be made usually with the esophagoscope. Carcinoma is more common in men than in women. The results of treatment in carcinoma have not been very satisfactory to date. Operative removal of the tumor can be considered only rarely and in any case radium and X ray treatment is to be preferred.

the theory that phrenicectomy is a simple collapse therapy and suggest that its efficacy must be due to some factor other than collapse. In the author's opinion this factor is a change in the capillary circulation of the lung—a vasodilatation with congestion bringing about a condition similar to that seen in patients with mitral stenosis, in whom pulmonary tuberculosis shows a slow development with a tendency toward sclerosis. This hypothesis is supported by the occasional occurrence of hemoptysis or congestive attacks immediately after phrenicectomy and by the sudden arrest by phrenicectomy of hemoptysis which previously resisted all treatment. The phrenic nerve apparently contains sympathetic fibers and has direct or indirect connections with the chains of ganglia and the sympathetic network of the lungs.

AUDREY Goss MORGAN, M.D.

Launay, C: The Phrenic Nerve as a Motor Nerve. Paralysis of the Diaphragm (*Le phrénique nerf moteur paralysé du diaphragme*). *Arch. méd.-chir. de l'app. respir.* 1934, 17, 5.

Some years ago Sergeant noticed that when the diaphragm was paralyzed by section of the phrenic nerve there was a gradual return of motor function of the paralyzed side after a period ranging from a year to eighteen months. He asked Launay to find the explanation of this fact.

Launay's experiments showed that the motor nerves of the two sides of the diaphragm are absolutely independent of each other and that the paralyzed side of the diaphragm is not re-innervated from the other side. They demonstrated also that section of the intercostal nerves does not paralyze the diaphragm and that stimulation of these nerves does not move it. There was no evidence that the sympathetic fibers of the phrenic nerve act as motor fibers. Launay states that sympathetic fibers usually have a trophic, tonic, or vasomotor function and there is no reason to believe that they act otherwise in the phrenic nerve.

He concludes that restoration of the motor function of the diaphragm after paralysis caused by section of the phrenic nerve is due to regeneration of the sectioned nerve. It does not take place if more than 15 cm. of the nerve is resected.

AUDREY Goss MORGAN, M.D.

Launay, C: The Phrenic Nerve as a Sensory Nerve (*Le phrénique nerf sensitif*). *Arch. méd.-chir. de l'app. respir.* 1934, 17, 13.

The author describes physiological experiments carried out on human subjects to determine whether the phrenic nerve has any action as a sensory nerve. He found that the central part of the diaphragmatic pleura receives only sensory filaments from the phrenic nerve. All the rest of the diaphragmatic pleura and the parietal pleura are innervated by the intercostal nerves. The phrenic nerve sends sensory filaments also to the subdiaphragmatic and lumbar peritoneum.

Any stimulation of the sensory territory and any stimulation of the trunk of the nerve itself at any level cause reflex pain in the following sensory regions: the subclavicular region, the regions above and below the spine of the scapula, the stump of the shoulder and the neck up to the mastoid. This territory is innervated by the third and fourth pairs of cervical nerves.

Secondary phrenic neuralgia is frequent, but has only two symptoms: spontaneous shoulder pain and supraclavicular pain. The symptoms generally attributed to phrenic neuralgia are generally caused by lesions of the intercostal nerves. Primary phrenic neuralgia is extremely rare and not well defined. Its characteristics are not in harmony with the physiological facts demonstrated with regard to the nerve and require further study. The absence of pain in the majority of cases in which the phrenic nerve is injured by mediastinal diseases is paradoxical.

AUDREY Goss MORGAN, M.D.

Sergeant, E., Launay, C., and Longuet, Y. J: The Phrenic Nerve as a Sympathetic Nerve (*Le phrénique nerf sympathique*). *Arch. méd.-chir. de l'app. respir.* 1934, 17, 31.

There is an anastomosis between the phrenic and the sympathetic nerves at the base of the neck and another in contact with the diaphragm. No doubt there are sympathetic fibers in the phrenic nerve, and it is probable that they are responsible for some of the effects of phrenicectomy. The action of phrenicectomy is generally believed to be mechanical, being attributed to the rise of the diaphragm and the reduction of the size of the lung. However the authors' extensive experience with the operation has shown that these mechanical factors do not explain all of the results. Immobility of the diaphragm and compression of the lung are not constant. In some cases there is a postoperative movement of the ribs allowing greater lateral displacement of the lung which acts as a substitute for the abolished vertical movement. Occasionally cure occurs so suddenly that it cannot be due to compression of the lung. In some cases the diaphragm hardly rises at all, yet the therapeutic results are excellent. The authors regard it as probable that these paradoxical results are due to the action of the sympathetic nerve. They discuss the findings of other investigators and give a bibliography on the subject.

AUDREY Goss MORGAN, M.D.

Frank, P: A Contribution to the Question of Hiatus Herniae (Beitrag zur Frage der Hiatushernien). *Frankfurt Ztschr. f. Path.* 1933, 214, 23.

The author calls attention to the 3 types of hernia of the diaphragm distinguished by Akerlund: (1) hiatus hernia with a congenitally short esophagus, reposition of which is impossible; (2) para-esophageal hernia; and (3) acquired true hernia of the esophageal hiatus.

The third type is the one under dispute. Von Bergmann, Schatzki, and others saw it not infre-

quently Sauerbruch, Chaoul, and Adam considered it only a functional manifestation of the lower part of the oesophagus occurring during the act of swallowing. The points in dispute have not as yet been elucidated by pathologic-anatomical studies (Anders, Neumann, Koeppen).

The author reports the findings of a study of the topography of the oesophageal hiatus in 400 cadavers. In 350 of the cadavers the mobility of the oesophagus was tested but only when the stomach was empty and relaxed. Only 10 were studied by the method of Anders and Bahrmann on the freshly contracted, filled stomach with increased pressure in the abdomen (elevation of the pelvis). Frank attempted to answer the following questions:

1. Is it possible that with the proper technique of examination, the oesophageal orifice of the stomach can be displaced above the diaphragm into the thoracic cavity?

2. Does there occur an acquired true hernia of the oesophageal hiatus such as that recognized by Akerlund?

By roentgen examination it is possible to determine only whether gastric mucosa lies above the diaphragm, not whether there is a pathological bulging of the peritoneum, a true hernia.

The oesophageal hiatus is formed by the paired crus mediale of the lumbar portion of the diaphragm. The author found the following 4 types: (1) muscle bundles crossing each other in front of their points of insertion; (2) muscle bundles converging and uniting in the center of the centrum tendineum; (3) muscle bundles converging, but inserted into the centrum tendineum separately; and (4) muscle bundles diverging. These types of muscle-bundle arrangement are not related to the age of the subject.

In the examination of 200 cadavers attention was paid to sex and body type. The hiatus of Type 1 was the most common, especially in individuals with an epigastric angle equal to or less than a right angle. The hiatus Type 2 and that of Type 3 were found with about equal frequency in individuals of a short, stocky build. The hiatus of Type 4 was rare and nearly always associated with spinal deformities.

The hiatus ranged in length from 4 to 8 cm. and in width from 3 to 4 cm.

In 34 of 350 cadavers the mobility of the oesophagus was more than 1 cm. It increased with the age and the pyknic character of the body. In 8 cadavers, definitely gastric mucosa was found above the diaphragm, but as the peritoneum was in the normal

position the condition was not a true hernia. In only 3 cadavers did the findings agree with those described by Akerlund. In these, a true hernial sac ranging in size from that of a small apple to that of a small child's head was found. The cadavers ranged in age from seventy seven to eighty five years. However the displacement as regards the protrusion of the peritoneum was transitory, occurring only when the intra-abdominal pressure was marked and the tissues at the hiatus were yielding. As the studies were made on the lax stomachs of cadavers there was no doubt of the presence of hernial apertures. Although Neumann found peritoneum above the diaphragm in none of 250 cadavers and therefore denied the occurrence of true hernia, Frank cannot agree with Neumann's conclusion. He admits, however, that such hernia are rare and believes that most of the hernia which Schatzki found in .33 per cent of cadavers were pseudo-hernia.

Frank studied also the form of the lower end of the oesophagus and the position of the junction of the oesophageal and gastric mucosa. His findings agree with those of Anders, von Hayek, and Neumann. He states that at an early age the lower end of the oesophagus is oval, but later becomes more bell-shaped. A sharp demarcation of the end of the oesophagus by an orally directed sulcus hiatus and a cardially directed sulcus cardiacus was frequently observed. In the majority of cases the junction of the oesophageal and gastric mucosa was at the level of the sulcus cardiacus. The lower end of the oesophagus was sometimes epiphrenal, sometimes endophrenal, and sometimes hypophrenal. The course of the peritoneum and of the connective tissue elastic membrana phreno-oesophagealis on which the peritoneum lies also showed variations. In 11 cadavers a displacement of the peritoneum into the thoracic space could be demonstrated.

With regard to para-oesophageal hernia the author states that the upward bulging of the peritoneum does not occur in a uniformly circular manner around the oesophagus, being more pronounced on the anterior and lateral segments of its circumference than on the posterior segment and that perhaps even in these hernia the transition is more transitory than has been assumed heretofore. He rejects the theory of Sauerbruch that broad muscular bands unite the oesophagus organically with the diaphragm. He has never seen such a union. He states that the oesophagus is not fixed, but very mobile.

FRANK (2)

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Consiglio, V. Congenital Superficial Inguinal Hernia—the Hernia of Kuester (*Hernia inguino-superficialis congenita—ernia di Kuester*) *Clin chir* 1934, 2, 342

In 1836 Kuester described a form of congenital hernia with the following characteristics

1 The hernial sac is a peritoneal diverticulum in which are contained the testis and spermatic cord. Therefore it is exclusively a congenital hernia. The orifice of the hernia is wide and crosses the abdominal wall from before backward.

2 The testis has not descended into the scrotum. As a rule it lies near the external inguinal ring, but at times a considerable distance from it. The testis is always ectopic.

3 The testis is always atrophic, and the spermatic cord is usually shorter than normal.

4 The hernial sac is covered exclusively by the skin and the thinnest superficial fascia. The infundibuliform fascia and the cremaster muscle are lacking internally or are incompletely developed.

Consiglio reviews thirty-five cases of this hernia which were treated at the General Surgical Clinic of the Royal University of Pisa during a period of twelve years. He believes that such cases are not so rare as is suggested by the infrequency of reports regarding the condition. He discusses in detail the classification, pathogenesis, pathological anatomy, evolution, and symptoms of the hernia. He states that the presence of such a hernia should be considered when there is a pre-inguinal or crural swelling associated with absence of the testis from the scrotum on the same side. In cases of peringuinal hernia which are by far the most frequent, important diagnostic information is furnished by the path taken by the herniated viscus on manual reduction. In cases of oblique external hernia the viscus is reduced only if it is pushed from the base upward and from within outward, whereas in cases of Kuester's hernia reduction is brought about only when the herniated viscus is pushed inward from without and from above parallel with the inguinal ligament. To be certain that the swelling is superficial the patient should be told to contract the abdominal muscles. This will show whether it lies above or below the musculo-aponeurotic plane. The diagnosis from simple ectopic testis may be difficult. In the differentiation from crural hernia the position of the testis may help.

The treatment is always surgical. In the thirty-five cases reviewed by Consiglio favorable results were obtained from a modified Bassini operation with fixation of the testis in the scrotum.

EDMUND T. LEXER, M.D.

GASTRO-INTESTINAL TRACT

Pigalev J.: The Genesis of the Ulcer Process in the Gastro-Intestinal Tract (*Zur Frage ueber die Genese der Geschwuerprozesse im Magendarmkanal*) *Arch. Biol. Nesch* 1933, xxii, 40

The author accepts the theory of Speransky that certain local pathological processes are caused by a disturbance of coordinated function of the nerve centers. He states that early disturbances of the nervous system frequently result from local peripheral foci and for some time are limited to nerve segments. Later the process may extend to other parts of the nervous system (generalisation of peripheral dystrophies).

In experiments on twenty dogs which were carried out by Pigalev an incision was made from the base of the nose to the second or third cervical vertebra, the soft tissues were displaced laterally on both sides, and a wide lateral trephination was done. The dog's mouth was then widely opened and all of the nerves and blood vessels at the base of the skull were drawn downward. The cerebro-spinal fluid was removed by suboccipital puncture and the hypophysis exposed by making a T-shaped incision in the dura and pushing the brain to the opposite side. A glass semicircle was then introduced against the hypophysis so that the open end of the glass rested at the side of the hypophysis and the arc of the glass touched the adjacent part of the brain (the posterior part of the tuber cinereum and substantia perforata posterior). The advantage of this technique is the absence of bleeding.

The author divides the experimental animals into four groups: (1) dogs which died within from twenty-four to forty-eight hours, (2) dogs which showed gradually developing disturbances and died after from one to four weeks, (3) convalescent dogs which eventually died of a periodical dystrophy, and (4) dogs without postoperative effects.

In the dogs of Group 1 the findings consisted of softening of the gingivae, ulceration of the mucous membrane of the mouth, and extravasations into the gastro-intestinal tract. The most marked hemorrhagic extravasations occurred in the pyloric portion of the stomach, the first part of the duodenum, the region of ileocecal valve and the mucous membrane of the rectum. The rest of the gastro-intestinal tract was normal.

In the dogs of Group 2 the findings were a tendency toward bleeding and softening of the gingivae, thin, hemorrhagic stools, and similar hemorrhagic changes in the gastro-intestinal tract.

In the dogs of Group 3 these findings were definitely diminished after convalescence. Necropsy showed, besides the oral changes, hemorrhagic

extravasations similar to those in the other groups. In addition there were, in the same areas, erosions and ulcers of the mucous membrane and smooth scars indicative of healing in previously ulcerated areas. The dogs of this group died from very minor additional irritation caused by the injection of an emulsion of dead typhoid bacilli. The clinical picture following such an injection was exactly similar to that noted in the cases of the dogs of the other groups (gingival changes, intestinal hemorrhage, and thin, hemorrhagic stools).

The control dogs showed no effects from injections of the emulsion.

The author demonstrated that a disturbance of the tuber cinereum or substantia perforata posterior always leads to a series of dystrophic changes in the periphery (gastro-intestinal tract). He concludes that disturbances of the physiological condition result from perversion of function of nerve cells. Similar intestinal changes were observed by Lyssa. The author has observed the same clinical picture and similar localization of hemorrhages in patients who died of brain tumors. He calls attention to the fact that very similar phenomena are noted in cases of poisoning by the salts of heavy metals, and concludes that ulcer disease and gastro-intestinal hemorrhage occur in definite areas where carcinoma is also most frequent. He states that the phenomena do not depend on the character of the irritation—the latter may be varied (brain tumor, intoxication, and burns)—but is secondary to a definite type of dystrophic nerve process which may be latent in the nervous system. A. SIMON (Z)

Willie, D. P. D.: *The Surgical Aspects of Dyspepsia*.
Predilector 1934, cxxix, 417

In some cases of dyspepsia a history of previous good health with onset of the dyspepsia following worry, a chill, loss of sleep, or a dietetic indiscretion makes it possible, with little difficulty, to make a diagnosis of a functional disturbance which will yield readily to treatment. In other cases the general appearance of the patient may furnish the clue to the nature of the condition as the facies of the phthisical patient will suggest the dyspepsia of tuberculous disease whereas slight puffiness of the face associated with headache, giddiness, and a high tension pulse will suggest the dyspepsia of renal disease. In the cases of men over fifty years of age the gastric disturbances associated with backward pressure on the kidneys must be borne in mind and it is necessary to determine the function of the bladder and the condition of the prostate. In the thin asthenic type of female a general visceroptosis and lack of tone of the abdominal muscles may be the only discoverable abnormalities. If no general conditions such as those cited can be found the following questions must be answered:

1. Are the symptoms dependent upon an organic lesion of the stomach or duodenum or are they reflex from a disease or disorder of some other abdominal organ?

2. If an organic disease is present, can it be treated successfully by medical measures or will surgery be necessary?

The author discusses the diagnosis of the various lesions commonly causing dyspepsia and briefly reviews the indications for their surgical treatment.

PEPTIC ULCER

Whereas some peptic ulcers give rise to very few symptoms until their presence is manifested by perforation or hemorrhage, patients suffering from peptic ulcer generally give a very characteristic history of intermittent dyspepsia. It is seldom that an ulcer does not cause attacks of indigestion lasting for several weeks with intervals of freedom from symptoms lasting for several months. Regularly periodic indigestion is rare in the absence of ulcer. As a rule the attacks of pain are at first very definite. They last two or three weeks, come on with clock like regularity at a definite time after the ingestion of food and sometimes waken the patient at night. In long standing cases the symptoms become less severe but more constant. In cases of duodenal ulcer vomiting is rare, whereas in cases of gastric ulcer it is common. A history of irregular and capricious pains associated with flatulence suggests that the gastric symptoms have a reflex origin.

In the first or second attacks of dyspepsia of the ulcer type it is justifiable to treat by dietary and medicinal measures without further investigation, but in cases of frequently recurring attacks with evidence of stenosis or a history of hemorrhage a fuller investigation is necessary. Lengthening of the attacks, increasing flatulence, a sense of fullness after the ingestion of food, the occurrence of vomiting in the evening or during the night, and a large splashing stomach may indicate a stenosis.

A few years ago there was a strong reaction against surgical measures in the treatment of peptic ulcer and in favor of prolonged medical treatment. This was due to the numerous poor results which followed the indiscreet use of surgery as a quick method of treatment. Today surgery is employed more frequently but is used with deliberation and discrimination. The treatment of peptic ulcer is primarily and essentially medical but there are certain conditions which render surgery necessary. These are: (1) stenosis with dilatation of the stomach and gastric stasis, (2) persistent recurrence of symptoms after medical treatment, (3) inability of the patient to carry out adequate medical treatment, and (4) the occurrence of two or more hemorrhages. In cases of gastric ulcer another indication for surgery is the possibility of the occurrence of malignancy in a large chronic, and penetrating ulcer. In such cases operation usually performed is partial gastrectomy.

The feature of ulcer which frequently first raises the question of surgery is hemorrhage. The general belief that hemorrhage from a peptic ulcer is rarely fatal is not supported by the evidence. Bulmer found a mortality of 11.5 per cent in cases of hematemesis from peptic ulcer. The death rate is twice as high in

the cases of males as in those of females. In cases of repeated hematemesis or melena leading to prostration, especially in males, the advisability of surgical intervention should always be considered. Next to operation, the most effective method of stopping hemorrhage and maintaining the patient's strength is blood transfusion. In the severe case this should always be tried first. Operation should be advised if it fails. Operation should always be considered when two attacks of pronounced bleeding have occurred.

GASTRIC CARCINOMA

Of all forms of carcinoma which the surgeon is called upon to treat, carcinoma of the stomach is the most disheartening as its onset and early stages are so insidious that the patient does not seek advice until the lesion is well established. Moreover the vascularity of, and free lymph drainage from, the stomach and the periodical vascular congestion of the stomach following meals favor early spread of the condition with the formation of glandular, peritoneal, and hepatic metastases. If the carcinoma begins at the pylorus, the symptoms and signs of an obstructive lesion may cause the patient to seek treatment early enough for successful extirpation of the growth. However in the majority of cases the tumor begins proximal to the pylorus, obstruction is not a usual feature, pain is absent in the early stages, and the only symptoms may be a loss of energy, appetite and weight. It is therefore essential to bear the possibility of gastric carcinoma in mind in the case of a patient complaining of vague symptoms of ill health and ill-defined dyspepsia.

The examination should always include (1) a test meal to ascertain whether free hydrochloric acid is present, and (2) a roentgen examination. The latter will often reveal a carcinoma long before the clinical picture. Unless there is very clear evidence of extensive metastases, it is well to explore the abdomen in cases of gastric carcinoma. Sometimes the growth will be found less extensive than was expected and resection will be possible. Occasionally if pyloric or duodenal obstruction is present, a short-circuiting operation will give months of comfort. Even when nothing at all can be done, the exploration is often followed by temporary improvement.

REFLEX DYSPEPSIA

Recently there has been considerable controversy as to the occurrence of such a pathological entity as chronic appendicitis. While the appendix has often been sacrificed needlessly because of diagnostic perplexity the author believes that chronic inflammation of the appendix not only occurs, but often gives rise to chronic and troublesome dyspepsia. The characteristic features of the dyspepsia due to chronic appendicitis are irregularity of its incidence, absence of the distinct periodicity of the dyspepsia of ulcer, discomfort after the ingestion of certain foods, and possibly an occasional ache or discomfort in the right lower quadrant of the abdomen. Examination frequently reveals a dirty tongue, absence of tenderness

in the epigastrium, definite tenderness in the right iliac fossa, and the occurrence of vague pain in the epigastrium when pressure is made over the appendix.

Fluoroscopic examination is helpful as it usually shows an irritable stomach with slight delay in emptying and a spastic duodenal cap. Frequently it reveals also some spasticity in the lower coils of the ileum and definite tenderness over the cecum. The appendix, which empties slowly, may present an irregularly segmented shadow. However the indirect evidence is more valuable. In some cases it is advisable to carry out also a gall-bladder dye test as it is necessary to determine not only whether the appendix is diseased but also whether it is the sole cause of the dyspeptic trouble. When there is evidence of disease of the appendix it is useless to continue medical treatment for the indigestion until the appendix is removed.

The statistical records of the gastro-enterological departments of several American hospitals show that gall-bladder disease is among the most frequent causes of dyspepsia. In women it is the first cause. While it is most common in middle-aged, stout, multiparous women, it may occur in women of all ages and of all types, including those of the spare asthenic, and vasomotoric build.

The characteristic features of gall bladder dyspepsia are discomfort immediately after the ingestion of food, flatulence, and a sensation of distention in the upper part of the abdomen. The taking of cooled fat in any form usually causes discomfort and sometimes precipitates an attack of acute pain. Aching in the right shoulder blade, often described as rheumatism, is common. Acute pain at the tip of the right shoulder is significant, but occurs only occasionally. Aching pain under the right costal margin, especially after a chill or on active exertion, and a variable tenderness to touch in this region are characteristic. A history of acute attacks with malaise, fever, a faint tinge of jaundice, and pronounced tenderness below the ninth costal cartilage point to recurring attacks of obstructive cholecystitis from a stone blocking the cystic duct or the neck of the gall bladder. Definite jaundice associated with pain, rigor fever and loss of weight indicates the presence of a stone in the common duct.

The indications for surgical treatment in biliary dyspepsia are (1) recurring attacks of colic indicating the presence of stones, (2) an attack of acute obstructive cholecystitis, (3) persistent dyspepsia in spite of the avoidance of fats and the taking of drugs to promote a flow of bile, (4) symptoms of stone in the common bile duct, and (5) evidence of secondary toxic effects such as chronic rheumatism and cardiac disorders.

As surgery of the biliary passages has now become safer and more successful than surgery of any other abdominal organ and as we know that the late complications of biliary infection are numerous and often fatal, it is difficult to justify prolonged expectant measures when a diagnosis of cholecystitis with gall stones is made. On the other hand, before a patient

with biliary disease is subjected to operation the general condition must be improved as much as possible. Persons with biliary disease are usually stout and often breathless on exertion. A reducing diet and regulated exercise for a period of three months should be prescribed and supervised. Such treatment makes operation both safer and easier.

MULTIPLE LESIONS

It must always be borne in mind that lesions may be present simultaneously in the stomach, duodenum, gall bladder, and appendix. A clinical picture which would otherwise be confusing may become clear if we remember that the abdominal triad of lesions—duodenal ulcer, cholecystitis and chronic appendicitis—is by no means uncommon. The author has operated on about thirty cases in which the duodenum, gall bladder, and appendix were diseased and has repeatedly found that a streptococcus could be grown from each of the lesions. He states that failure to deal with all of the lesions may lead to persistence of the symptoms and bring discredit to surgery.

JOHN J. MALONEY, M.D.

Chavez, P. R., and Amado, L. D.: The Method of Multiple Extractions of Gastric Juice (O método das extracções múltiples do suco gástrico) *Arq. de psich.* 1933 v 377

The authors discuss the histological physiology of gastric secretion describing the glands of the different regions of the stomach and outlining the different phases of digestion. They then review and criticize the older methods of studying gastric secretion and describe their own method which consists in fractional removal of portions of the gastric contents every twenty minutes for from two and a half to three hours. Their object is to obtain information regarding not only the acidity but also the motility, the evacuation time, the amount of secretion, and the chloride content. They use Sahli's bouillon made of egg yolks and Liebig's beef extract which is an intense stimulant of gastric secretion. They leave out the potassium iodide which Sahli adds.

They describe and illustrate nine types of curve obtained in this way, giving with each graph a brief résumé of the clinical history.

The curve of Type 1 is the normal curve (Reflux isosecretory type). This may be seen also in cases of abdominal disease without inflammatory involvement of the duodenum, cases of ulcer of the lesser curvature of the stomach, and cases of gastric catarrh. The lesser curvature of the stomach is evidently not very easily stimulated. The occurrence of clinical signs of gastric ulcer with a normal type of curve indicates an uncomplicated ulcer of the lesser curvature. An abundance of mucus and the presence of cells from the gastric mucosa or the gall bladder sometimes are of aid in the localization of the process. If free hydrochloric acid is absent or appears too late the curve should not be classified in this group even though the peak of total acidity is normal (60-70). If the descending branch of the curve does not come down to the normal level but is prolonged

in a horizontal line, the curve indicates abnormal excitability during the intestinal phase of digestion. Curves of this type are seen in cases of pyloroduodenal inflammation with or without ulcer but they are not sufficient for the diagnosis of such inflammations unless there is an unusual intestinal phase.

The curve of Type 2 is the hyperacidity curve. If the hyperacidity is not extremely high and falls again quickly, it has no pathological significance. If it is 100 or more, it almost always indicates irritation of the antral region and less frequently of the duodenum even if it falls again at the end of the experiment. Curves of this type are more significant if the descending branch stops after three hours at a value below normal or if, after a partial fall it becomes more or less horizontal at quite a high level. Under such circumstances free hydrochloric acid is present from the beginning of the experiment and there is a large volume of very acid fasting-stomach contents. Sometimes the descending branch shows a final rise. Sometimes pyloroduodenal ulcer with hypersecretion and hyperacidity is indicated by a curve of this type.

The curve of Type 3 is a biphasic curve characterized by two curves in the same digestive period. Free hydrochloric acid appears early and follows the total acidity. These curves indicate a separation of the two phases, the psychic and gastric phases taken together and the intestinal phase. In some curves in this group there is a second elevation without the appearance of a descending branch in the three hours of observation. The final rise in certain curves of Type 3 is due to insufficient neutralizing factors with very energetic gland stimulation. This third type is associated with inflammatory and ulcerous lesions of the antrum and duodenum.

The curve of Type 4 is the descending curve. The acidity rises progressively for two hours or even to the end of the experiment. Free hydrochloric acid appears early. The curve of this type indicates pyloroduodenal irritation and periduodenitis. It may occur also in obstruction of the pylorus if there is a marked hypersecretion. Under such circumstances there may be transitions to the high plateau type and the stair-case type of curve.

The curve of Type 5 is the stair-case curve. This is an ascending but broken curve. In the cases in which it is found hemorrhages are not unusual. It is seen in pathological cases similar to those in which the curve of Type 4 occurs.

The curve of Type 6 is the plateau curve associated with hypersecretion. After a more or less rapid ascent up to a normal or higher than normal level the line for total acidity continues horizontally. As a rule some of the soup is found in the stomach throughout the experiment although free hydrochloric acid appears relatively early. The plateau type of curve is seen in cases of stasis from hypomotility, dilatation, or stenosis of the pylorus. Certain very high plateau curves indicate simply great secretory excitability of the stomach or duodenum without retention.

The curve of Type 7 is an isosecretory or plateau type of curve not associated with free hydrochloric acid. It signifies retardation of evacuation and indicates the response of secretion to the direct action of the Liebig extract and to psychic stimulation. Therefore it rises. Lack or obliteration of the intestinal reflex and perhaps of the antral reflex results in a final hyposecretion. If the stomach contents are not evacuated the curve does not fall and is of the plateau type. When there is intense neutralization or sufficient evacuation of the stomach contents occurs, the curve is of the isosecretory type. Such curves are seen in cases of pancreatitis, cholecystitis, cancer and senous anemia. In the use of other test meals hypochlorhydric or anchlorhydric curves would be obtained and it would be impossible to determine the extent to which the glands respond to direct and indirect stimuli.

The curve of Type 8 is the curve of hypochlorhydria or anchlorhydria similar to the curves seen after other test meals. It is rarely seen after the Sahli meal. It may show an initial rise indicating the capacity of the fundal glands to secrete acid. It is observed in conditions similar to those producing the curve of Type 7.

The curve of Type 9 is the curve of retarded digestion or psychic achylia. A high beginning rise is followed by a secondary elevation due to exaggeration of duodenal excitability. The curve is of the reflex type from pyloroduodenal inflammation or ulcer. It is very rare after the Sahli meal.

In conclusion the authors state that these curves are not pathognomonic, being modified by pathological-anatomical lesions. They discuss the various modifying factors in detail in connection with the cases reported. *AUDREY GOSSE MORGAN, M.D.*

Nédelec, M.: Tuberculosis of the Stomach (La tuberculose de l'estomac). *Arch. franc. belge de chir.* 1935-1936, 70.

The author discusses tuberculosis of the stomach especially from the pathological aspect. He reports the case of a patient with pyloric obstruction due to an inflammatory mass for which a posterior gastro-enterostomy was done. During the first month after the operation there was considerable improvement but later the epigastric pain, weakness, and diarrhea recurred. At a second laparotomy the pylorus was removed. The inflammatory mass was found to have disappeared, leaving only an ulcer with fibrosis, but enlargement of the regional lymph nodes was still present and the duodenal mucosa was thickened and involved by tuberculous granulations. The diagnosis was made by histological examination of the tissue. The patient died forty-eight hours after the second operation.

Tuberculosis of the stomach is rare. It is most frequent before the age of thirty-five years. It is manifested clinically by the symptoms of a rapidly progressing stenosis of the pylorus. While cold abscess of the stomach has been reported twice and there are descriptions of a diffuse form of gastric tu-

berculosis resembling linitis plastica, the common pathological types are the ulcerating and the hypertrophic. The author discusses the frequency symptoms, pathology and diagnosis of these two forms. He concludes that the findings are easily confused with those of gastric ulcer or carcinoma. The diagnosis is generally made by histological examination of the removed tissue. A clinical diagnosis is exceptional.

Nédelec reviews fifty-seven surgically treated cases collected from the literature. He states that resection of the pylorus is probably the procedure of choice. *NATHAN A. WOMACK, M.D.*

Rieder, W.: Pathological Changes of the Nerves of the Stomach in Cases of Gastric and Duodenal Ulcer (Pathologische Veränderungen des Nervenapparates im Magen bei Ulcus ventriculi und duodeni). *33 Tag. d. deutsch. Ges. f. Chir.* Berlin, 1934.

To obtain a clear picture of the pathological changes occurring in the intramural nerves in cases of ulcer, Rieder made histological studies in a large number of the cases in which gastric resection has been done at the Eppendorf Clinic since 1931. The staining method of Gross was used. Attention was directed chiefly to the parts of the resected specimen at a distance from the ulcer. Altogether examinations were made in seventy-one cases of ulcer of the stomach and duodenum, nine of perforated ulcer, six of gastritis, five of gastric carcinoma, and three in which no pathological changes were discovered in the specimen.

While in the normal stomach the ganglion cells of the Auerbach and the Meissner plexus show pathological change only here and there, all of the seventy-one gastric specimens from cases of ulcer examined by Rieder showed a more or less marked diffuse ganglion-cell degeneration.

In the cases of perforated ulcer the findings were similar to those in cases of chronic ulcer. While in most of the former the ganglia showed a larger number of normal cells, it could not be said that the degeneration itself was less in the cases of perforated ulcer.

In the cases of gastritis the cell and nerve changes were the same as those found in the cases of true ulcer but as a rule were less marked than in the latter.

In the cases of carcinoma the degree of the cellular changes was dependent upon the extent of the invasion and the condition of the ulcer. The changes were marked even in areas at a distance from the carcinoma when the lesion had broken down and had become secondarily infected. In a beginning small carcinoma of the pylorus they were relatively slight.

Of special interest were the findings in the three resection specimens in which neither macroscopic nor microscopic examination revealed evidence of gastritis. All three of the patients from whom these specimens had been removed had an ulcer history of a year's duration and were referred to the surgeon.

after the failure of medical therapy by internists. Although the usual methods of examination disclosed no abnormality, the Gross technique demonstrated pathological changes in the intramural plexus which were probably responsible for the persistent symptoms. As tempting as it is to consider the changes in these three cases like those in gastritis, as forerunners of ulcer and to regard the cell and nerve degeneration found in cases of ulcer as having a causal relationship to the development of ulcer the author admits that proof to support such a conclusion cannot be obtained by morphological methods. However he believes that he will be able to explain their relationship by experimental investigations.

In the discussion of this report SUNDER PLASSMANN stated that chromatolysis is always a sign of definite degeneration and therefore of definite pathological changes in the sympathetic ganglion cells. Although the findings of Stoehr and of Rieder indicate that in cases of gastric and duodenal ulcer the intramural nerves are always diseased in their entirety, Sunder Plassmann has found that after inflammatory changes in the intestinal tract this is not always true. He showed a photomicrograph of an appendix in which it was clearly evident that while even after a single attack there were marked changes in the intramural ganglion cells within twenty-four hours, the terminal reticulum which is of central sympathetic origin presented no changes and showed itself to be in general very resistant. He believes that the changes in the ganglion cells, which are very easily demonstrable after a single attack, are irreversible and by reducing the motility and therefore the automatic emptying capacity of the appendix, favor recurrence. (Z)

Makras, M: Perforation of Postoperative Peptic Ulcer of the Jejunum into the Free Peritoneal Cavity (Die freie Perforation des postoperativen peptischen Jejunalgeschwüres) *Beitr z Klin Chir* 1934, cliv, 61

This article is based on 131 cases of peptic ulcer of the jejunum perforating into the free peritoneal cavity which were collected from the literature. The author chose only cases which were reported in detail. He states that the incidence of such ulcers is doubtless very much higher than is suggested by this number as at least 170 cases have been reported. In general however jejunal ulcers perforate less frequently than gastric and duodenal ulcers.

Perforation into the free peritoneal cavity occurs more often after anterior than after posterior gastro-enterostomy. This is easily explained by the anatomical relationships. As a rule jejunal ulcers perforate less often than gastrojejunal ulcers. In the literature attention is frequently called to the fact that a perforating jejunal ulcer is often preceded by a perforating duodenal or gastric ulcer. Patients treated for perforation of a jejunal ulcer by simple closure of the perforation very often have another

or more than one perforation at the same site or develop a new jejunal ulcer. In 16 of the cases reviewed by the author there were 45 ulcer perforations. In contrast to jejunal ulcers, gastric and duodenal ulcers very rarely perforate a second time. The explanation for the unusual behavior of jejunal ulcers is not known. In many of the cases reviewed an anterior gastro-enterostomy was performed primarily.

In the treatment of jejunal ulcer perforating into the free peritoneal cavity simple suture with or without excision is to be considered. In cases so treated the mortality ranges from 22 to 23 1/4 per cent and there is danger of subsequent perforation. In 7 of the cases reviewed degastrostomy was done. From his own cases and those reported in the literature the author concludes that the radical method may be chosen when the patient's general condition will permit it and the topical relationships will not render the operation too difficult. In 24 cases treated radically the mortality was 8.3 per cent.

WANKER (Z)

Ellison E. L. and Ebeling, W. W. Catastrophes of Peptic Ulcer. *Am J Surg* 1934 xvi, 63

All the cases of duodenal and gastric ulcer recorded in the past ten years on Surgical Division C and in the Medical Clinic of the University of Pennsylvania Hospital and at the Philadelphia General Hospital were studied to determine the relative occurrence and mortality of "the 2 ulcer catastrophes, hemorrhage and perforation. Hematemesis or melena occurred in 107 (29.5 per cent) of 546 cases of duodenal ulcer and in 36 (39.1 per cent) of 92 cases of gastric ulcer. In the 107 cases of acute hemorrhage from duodenal ulcer there was 1 death. This was due to an erosion in the side of a large vessel running across the floor of a large calloused ulcer. In the 36 cases of acute hemorrhage secondary to gastric ulcer there were 3 deaths. The total of 4 deaths in the 143 cases of bleeding ulcer made the non-operative mortality 2.7 per cent.

The treatment of acute hemorrhage for gastric or duodenal ulcer consisted in general of bed rest, the administration of morphine, the passage of a Jutte tube which was gently flushed at hourly intervals, the withholding of nourishment by mouth and the administration of physiological salt solution by hypodermoclysis and of tap water or salt solution by proctoclysis. Physiological salt solution with a 5 to 10 per cent content of dextrose was given preferably by venoclysis.

The low mortality of hemorrhage in medically treated cases, which did not even approach that of surgery in cases of ulcer without hemorrhage led to the conclusion that early surgical intervention for acute hemorrhage is contra-indicated.

Five hundred and forty six duodenal and 183 gastric lesions were reviewed with regard to the occurrence of perforation. Sixty (11.0 per cent) of the duodenal ulcers and 14 (7.6 per cent) of the gastric ulcers had perforated. Of the 74 patients

with perforations, only 1 was a female. Frank haematemesis occurred in 9 of 54 cases of ulcer. Perforation occurred with equal frequency throughout the year. Thirty of the perforated ulcers were closed with drainage of the peritoneal cavity and 3 were closed without drainage. Simple closure was therefore done in 33 (47 per cent) of the cases. In many the ulcer was cauterized prior to closure. Gastro-enterostomy was added to simple closure in 15 cases with drainage and in 9 without drainage being therefore performed in 24 (34 per cent) of the cases. Drainage alone was done in 10 cases in which the condition of the patient, the presence of a localized abscess, or failure to find the perforation made this procedure necessary.

The gross mortality in the 74 cases of perforated ulcer was 35.0 per cent. As has been reported by others, the mortality of perforated ulcers becomes progressively higher with an increase in the time elapsing between the occurrence of the perforation and surgery.

Fifty per cent of the deaths in the cases reviewed were due to peritonitis, 14 per cent to pulmonary complications, and the rest to cardiac failure, intestinal obstruction and unknown causes.

This study demonstrated very definitely that gastro-enterostomy added to a simple closure does not affect the mortality if the procedure is carried out in selected early cases.

The findings indicate also that medical treatment has the lowest immediate mortality in cases of acute exsanguinating hemorrhage from a bleeding gastric or duodenal ulcer and that in cases treated by the average surgeon the immediate mortality is lowest when the treatment consists in simple closure with adequate drainage of the peritoneal cavity plus gastric drainage by means of a J-tube, adequate pulmonary exercise and the administration of sufficient fluid.

SURGEON J. FORDHAM, M.D.

Ravens, C.: Operative Treatment of Mechanical Ileus (Ueber die operative Behandlung des mechanischen Ileus). *Deutsche Zeitsch f. Chir.* 1933, vol. 603.

The author has collected 410 cases of ileus which were treated in the Surgical Clinic of the University of Kiel in a period of twenty-three years. He divides them into those with (1) destructive occlusion (strangulation, volvulus of the small and large intestine, and invagination), (2) adhesive occlusion, (3) smooth occlusion (obstruction from carcinomas and other causes) and (4) occlusion of an unusual or doubtful nature. The cases of each type are discussed statistically with regard to the duration of the ileus, the age of the patient, and the type of operation, whether with opening of the intestine (Group A) or without opening of the intestine (Group B).

In strangulation ileus removal of the obstruction is necessary as unless this is done gangrene and peritonitis will develop. Evacuation should be avoided if possible. The 44 cases with opening of

the intestine, i.e. primary enterostomy rupture, and resection of the intestine had a mortality of 70 per cent and the 31 without opening or with secondary enterostomy a mortality of 25 per cent. The mortality increased with the length of time the ileus was present. In the cases treated on the fourth day operations with opening of the intestine were done more frequently than operations without opening. The most frequent cause of death was peritonitis. As the strangulated intestine develops a pathological permeability early the utmost care in handling the intestine is necessary.

In the discussion of volvulus the author points out that physiological conditions cause the organism to react much more violently to an acute occlusion of the small intestine than to occlusion of the large intestine. In the former the mortality is 50 per cent, whereas in the latter it is 25 per cent. Of 34 cases of volvulus of the small intestine, resection was sufficient in 15 and the mortality was 33 per cent. In 13 cases, resection was done with a mortality of 45.6 per cent. Enterostomy was done in 1 case and enterostomy in 3 cases was not successful. In the cases of volvulus of the small intestine which belonged to group A the mortality was 53.3 per cent, and in those belonging to group B it was 33 per cent. Opening of the intestine was frequently necessary on the first day because in volvulus the type and extent of the operation depends not only on the condition of the intestine but also on that of the mesentery. Deformity of the mesentery (great length or circular change) is generally regarded as a preliminary condition to the occurrence of volvulus. Plastic procedures were not undertaken in the last clinic.

In ileus of the large intestine the danger of infection from suture insufficiency is particularly great. Therefore like most surgeons, those of the Kiel Clinic avoid primary resection when possible. When resection is necessary they perform it in 2 stages. Of the reviewed 31 cases of volvulus of the large intestine, the caecum was involved in 7, the transverse colon in 1, and the sigmoid flexure in 23. In nearly all of the cases operations were done immediately because of the uncertainty of the diagnosis and the results of treatment when a waiting policy is adopted. In 5 cases the caecum was resected successfully and in 1 case it was resected. In 1 case the resection was done in 2 stages (cecectomy) with cure and in the other in 1 stage with a fatal outcome. The mortality from volvulus of the sigmoid flexure was 26 per cent. In 6 cases the volvulus was reduced successfully. In the others resection was done.

For ileus with invagination Anshutsch demands operation as early as possible in every case. Eighty-three cases were operated on with a mortality of 26.5 per cent. Duodenostomy was done in 61 cases with a mortality of 11.4 per cent, resection in 11 cases with a mortality of 45.4 per cent, and enterostomy in 10 cases with a mortality of 90 per cent. In 50 per cent of the cases operation was performed

on the first day. In 43 of 43 cases disinvagination was done. In those in which the disinvagination was done on the first day the mortality was 9.3 per cent, whereas in those treated on the second day it was 16.6 per cent. In spite of the statistics of Monrad, who prefers taxis, the surgeons at the Kiel Clinic still prefer operation. The author reports 3 cases in which the procedure recommended by von Redwitz—painting of the intussuscipts with tincture of opium—was used. The application of the opium is followed first by a violent contraction and then by relaxation during which disinvagination can usually be effected easily. However in 1 case the procedure failed. Opium poisoning is prevented by wiping off the tincture after the effect has been produced and giving coramin and lobelin prophylactically. In invagination the disadvantage of opening the intestine is especially evident as in the cases of patients older than one year resection and eventration had a mortality of 50 per cent whereas disinvagination had no mortality.

In the 121 cases of adhesion ileus the mortality was 33.8 per cent. In two-thirds of the cases the ileus was relieved by separation of the adhesions. In this group the mortality was 23.7 per cent. Forty per cent of the deaths were due to peritonitis. Entero-anastomosis had a mortality of 45.3 per cent. In 7 cases of enterostomy after separation of the adhesions the mortality was 42.8 per cent. The author advises against delaying laparotomy in cases running a severe course in which the condition cannot be differentiated from strangulation with certainty. Statistics show that on the second and third days the number of interventions in which it is found necessary to open the intestine is doubled.

In smooth occlusions (64 cases of carcinoma) disturbances of nutrition of the intestinal wall take place secondarily in the afferent portion only after more prolonged stasis. Therefore, conservative measures are more justifiable. The author agrees with the majority of surgeons that when ileus develops in cases of operable tumor a radical operation should not be done immediately but that first the dammed-back contents of the intestine should be evacuated. In cases of chronic ileus the mortality is increased by delay of treatment. Colostomy relieves the intestine with the least damage. In the cases reviewed the mortality was 37.5 per cent. In cases of inoperable tumor an artificial anus should be formed with the proper technique as soon as possible and close to the obstruction. In 2 cases in which resection was done in 1 stage death resulted. Of 12 cases in which entero-anastomosis was done a successful result was obtained in 6. In 7 cases in which eventration of the cecum was necessary because of gangrene and spontaneous perforation there were 6 deaths due to peritonitis. When the intestine was opened primarily, the mortality was 66.6 per cent, but when the opening was made after closure of the abdomen it was 4.4 per cent. With such mortality figures, the debilitating influence of carcinoma becomes clearly evident.

In the reviewed cases of occlusion due to other causes the choice of treatment depended upon the nature of the obstruction. When the obstruction arises from the intestinal wall the latter must be attacked and opening of the intestine cannot be avoided. If this procedure is followed by no improvement the obstruction must be removed before the general condition becomes too unfavorable. In the rare occlusions which are not readily diagnosed hepatic cirrhosis, spasms, pregnancy and ovarian cystoma were found to be causes, but in some cases the cause was not discovered even at autopsy.

After tabulation of his material the author comes to the same conclusion as Perthes: that in almost half of the cases an auxiliary operation to evacuate the intestine is unnecessary, and that in such cases no auxiliary operative measure should be undertaken. As a rule, evacuation of the intestine is undertaken only in the course of an intervention (resection and anastomosis) in which opening of the intestine is essential. In cases of obstructive occlusion (neoplasm) opening of the intestine is always necessary, but should be done only after the abdominal cavity has been closed. Of chief importance is early operation as only by this means will it be possible to reduce the mortality further.

WEINER LAMPRECHT (Z)

Grasso R: Erythrocytosis in Duodenal Ulcer (Sulla eritrocitosi nelle ulcere duodenali). *Clin. chir.* 1934, 2, 33.

After reviewing the literature on the increase in the red blood cells occurring in cases of duodenal and gastric ulcer the author reports his findings not only in cases of ulcer but also in cases of other gastro-intestinal disturbances associated with hyperchlorhydria. Of 23 cases of duodenal ulcer the red cell count was found to be below 5,000,000 in 2, about 5,000,000 in 3, from 5,000,000 to 5,500,000 in 12, from 5,500,000 to 6,000,000 in 6 and above 6,000,000 in 1. This erythrocytosis is attributed by the author to a hypersecretion of gastric juice with abnormally high acid and pepsin values. Grasso states that the patient suffering from ulcer has a stomach functionally above that of the normal individual. As evidence of this he cites the fact that 3 patients with an erythrocytosis and hyperchlorhydria prior to operation were found four months after resection to have a red cell count and gastric acid value slightly below normal.

These findings were duplicated in 6 dogs. An anemia was produced by repeated bleedings and after determination of the red-cell counts, 2 of the dogs were given injections of 1/2 mgm. and 2 were given injections of 1 mgm. of histamin for fifteen days and 2 were kept for controls. Half an hour after the injection the dogs were fed a meat paste. After ten days the red-cell count was between 4,000,000 and 5,000,000 in the control dogs while in the dogs treated with histamin it was between 5,000,000 and 6,000,000. After fifteen days the count for the controls had increased to between

4,500,000 and 5,500,000 and that for the histamin injected animals to between 6,500,000 and 7,000,000. These counts remained unchanged after twenty and thirty days.

From his findings the author concludes that histamine stimulation may be followed by an erythrocytosis which may be due to hypersecretion of a gastric ferment, called by some adiamin which regulates haematopoiesis. *SWINER, J. FOODBORO, M. D.*

Corkill, T. P. and Corkill, H. K.: Congenital Atresia of the Ileum. *Australas J. New Zealand J. Surg.* 1934, III, 353.

The authors report a case of complete atresia of the terminal ileum associated with malrotation of the colon in an infant two days old. This case differs from others reported in both the type of the obstruction and the operative procedure.

There was complete absence of the distal half of the ileum, the intestine being continued as an attenuated cord without an apparent lumen. In the middle of the attenuated cord there was a blind intestinal loop which appeared normal in every respect. There was no mesenteric defect. The ascending colon disappeared behind the mesentery of the small intestine and so transverse colon could be identified.

The operation consisted of side to side anastomosis between the dilated ileum and collapsed sigmoid plus an enterostomy about 15 cm. above the point of obstruction.

The enterostomy functioned well until the fourth day when a normal bowel movement occurred by rectum. The catheter came out at that time and was not replaced. The bowel movements increased with a corresponding decrease in drainage from the enterostomy. The enterostomy closed during the fourth postoperative week. In the five and a half months which have elapsed since the operation the infant has remained well and has developed normally.

Following a proposed classification of the types of obstruction encountered, the authors briefly discuss their etiology, diagnosis, and treatment. They admit that the addition of the enterostomy in their case was probably unnecessary but state that at the time of the operation they "were not acquainted with the knowledge that such a procedure whether alone or in combination with anastomosis, had hitherto been uniformly fatal" in such cases.

T. BARNARD JONES, M. D.

Schullinger, R. N., and Stout, A. P.: Meckel's Diverticulum. Report of a Case of Hemorrhage in the Bowel Associated with a Meckel's Diverticulum That Presented an Adenoma Composed of Gastric and Duodenal Glands. *Arch. Surg.* 1934, XLIII, 449.

The authors report a case of Meckel's diverticulum in a sixteen-year-old boy whose symptoms were caused by bleeding into the bowel from a non-ulcerating, pedunculated adenoma composed of gas-

tric and duodenal glands. They emphasize that Meckel's diverticulum frequently contains heterotopic alimentary tissue and this may be manifested clinically by bleeding. Bleeding is especially apt to occur when it contains heterotopic gastric tissue. Among other causes of bleeding from Meckel's diverticulum are peptic ulcer, invagination, inflammation, intussusception and pancreatic adenoma. The authors analyze reported cases due to each of these causes.

In addition to bleeding, the clinical features of lesions of Meckel's diverticulum are the history of a slowly healing umbilicus or a persistent sinus in the umbilical region, varying periods of constipation, indefinite abdominal pain, and the presence of other congenital anomalies. The symptoms usually begin in the first two decades of life. Meckel's diverticulum is about four times more frequent in males than in females.

Operative intervention is usually indicated because of the frequent presence of an acute abdominal condition. The diverticulum should be removed if the patient's condition will permit this to be done and if its removal will not produce too much damage to the surrounding viscera or favor the spread of infection. The mortality in cases of acute inflammatory lesions is about 40 per cent.

The case reported by the authors emphasizes that extremely severe acute symptoms, including abdominal pain and the passage from the rectum of blood unaltered with mucus, may occur in the absence of signs of invagination, intussusception, or ulceration.

A search for a Meckel's diverticulum should always be made in cases of unexplained bleeding by rectum or peritonitis and when the operative findings do not agree with the clinical diagnosis. The diverticulum should be removed even if it appears harmless, as the mortality is high when perforation occurs or an acute pathological process develops.

A person with a lesion of Meckel's diverticulum, especially if the lesion is a bleeding peptic ulcer, may pass from a state of relatively good health to a condition of acute illness, collapse, and shock with great rapidity. Sudden severe pain in the lower part of the abdomen with rigidity, signs of spreading peritonitis, fever, and leukocytosis, especially in children, should arouse the suspicion of perforation of Meckel's diverticulum. *MARCUS ALLEN, M. D.*

Crafoord, G.: The Cancer Coll. Material at Sabbatsbergs Hospital, 1900-1933. *Acta chirurg. Scand.* 1934, LVIII, 513.

This report is based on 161 cases of cancer of the colon. In 156 cases radical operation was done with a primary mortality of 35 per cent. In 5 cases death occurred soon after a preliminary operation for the relief of stasis. Thirty cases were inoperable.

A good therapeutic result requires early diagnosis. Therefore a knowledge of the initial symptoms is essential. The author divides the initial symptoms into the following 7 groups:

1 Generalized, diffuse abdominal symptoms. These were present in 101 of the cases reviewed and were initial symptoms in 83.

2 Symptoms of Intermittent ileus. These occurred in 60 cases and were initial symptoms in 30.

3 Acute ileus. This occurred in 102 of the cases and was an initial symptom in 16.

4 Emaciation and debility. These occurred in 82 of the cases reviewed and were initial symptoms in 13.

5 The admixture of blood and mucus in the feces. This occurred in 26 cases and was an initial symptom in 6.

6 Constipation. This was present in 51 cases and was an initial symptom in 16.

7 Diarrhoea. This occurred in 29 cases and was an initial symptom in 6.

The average length of time between the occurrence of the initial symptoms and the diagnosis in the majority of cases is seven months. This is due to the fact that persons of cancer age are not sufficiently aware of the importance of submitting to examination for vague symptoms.

The author emphasizes the value of X ray examination in the diagnosis of all uncertain cases and in the planning of the operation.

A factor of very great importance in the primary mortality is the time at which the radical operation is undertaken. It is not sufficient merely to relieve the ileus. Patients without ileus as well as those with this condition must be given sufficiently prolonged preliminary treatment to increase their resistance and reduce the pathogenicity of the intestinal flora. The author believes that in 30 of the cases reviewed the preliminary treatment was satisfactory. While 7 (14 per cent) of the 50 patients died, the deaths of only 2 (4 per cent) could be referred to the operative method. Of the remaining 71 patients treated by resection, 24 (34 per cent) succumbed as the direct result of the operation.

Kogon, A.: Systematic Emergency Operation in Acute Appendicitis in All Stages (Systematische dringliche Operation bei akuter Appendicitis in allen Stadien). *Nov chir Arch* 1933 xxiv, 84.

On the basis of 150 appendectomies with a total mortality of 4 per cent, which were performed any time (on any day) during the acute attack, i.e. even later than forty-eight hours after the beginning of the disease the author states he is an enthusiastic defender and adherent of this practice. Although it is permissible to subject the simple catarrhal forms of appendicitis to conservative expectant treatment even after from twenty four to forty-eight hours this conservatism seems very dangerous in other types of appendicitis which progress with more severe pathologico-anatomical changes. Since an exact anatomical diagnosis of pathological changes in the appendix is often impossible and the degree of the pathologico-anatomical lesions does not always correspond to the clinical findings, an expectant form of therapy is all the more injudicious.

The fear of surgeons to operate in the presence of infiltrations is not justified or warranted by clinical experience. On the contrary an infiltration or a resistance in the ileocolic region appears to be a strict indication for operation since these findings are indicative of severe destructive appendiceal changes. A recession of the clinical symptoms during the first to third days and later does not constitute proof that the further course of the disease will be harmless and therefore does not appear to be a contra indication to operation. Operation in the quiescent (interval) stage does not assure a favorable postoperative course or favorable healing. In the presence of infiltrations which regress considerably and become smaller under expectant therapy there is danger of an exacerbation of quiescent infection. Under such circumstances appendectomy not infrequently becomes a serious, very damaging procedure which may not only lead to the formation of fistulae but even threaten life (1 death in the author's cases). In contrast, the performance of appendectomy even in cases with severe suppurative gangrene and perforation leads to recession of all of the clinical phenomena during the first postoperative hours, regardless of the time at which the operation is undertaken. All in all systematic emergency appendectomy in all stages of acute appendicitis appears to be one of the most rational methods of treating this disease.

G. AUROY (Z)

Ross, L. I.: Carcinoma of the Rectum in Youth. *Am J Cancer* 1934 xxi, 323.

Carcinoma of the rectum is not strictly a disease of old age. In from 2 to 4 per cent of cases it occurs before the thirtieth year. There is no striking variation of its symptoms with age.

The condition is apparently more malignant when it occurs in youth than when it occurs in the later decades of life.

The majority of rectal carcinomata can be diagnosed by simple digital examination of the rectum.

SAMUEL KAHN, M.D.

LIVER, GALL BLADDER, PANCREAS AND SPLEEN

Gulpepper A. L., and von Haam E.: Primary Carcinoma of the Liver with Extensive Metastasis to the Right Heart and Tumor Thrombosis of the Inferior Vena Cava. *Am J Cancer* 1934 xvi, 355.

Primary carcinoma of the liver is a rare finding at autopsy. In several large series of autopsies it was found to constitute only from 0.12 to 0.14 per cent of diseases ending in death. Herzheimer recognizes two types (1) that having its origin in the liver cells, and (2) that having its origin in the bile duct epithelium.

The authors report a case of the first type. The patient, a negro fifty-six years of age presented the clinical picture of atherosclerotic cardiac disease.

with decompensation. The edema of the lower extremities and the ascites at first responded to salyrgan therapy. In the fifth week of the illness the patient died, apparently of cardiac failure.

At postmortem examination the right auricle was found to be greatly dilated and to contain a friable greenish-yellow metastatic tumor mass the size of a pigeon's egg, which was firmly attached to the wall. A few metastatic nodules were discovered in the lungs. The primary growth was in the liver the right lobe of which was especially enlarged. The entire lumen of the inferior vena cava was occluded by a large tumor mass which apparently had extended from the hepatic veins. Below the tumor mass the vena cava was obliterated by a large blood thrombus which extended downward into both iliac veins. Microscopic examination of the liver revealed the presence of portal cirrhosis and a hepatocellular carcinoma with numerous invasions of the hepatic and portal veins.

An unusual feature of the case was the complete absence of symptoms referable to the liver. According to the literature, the incidence of an initial portal cirrhosis in primary carcinoma of the liver ranges from 74.7 to 100 per cent. The complications which dominated the clinical picture and led to death in the authors' case were the tumor thrombosis of the inferior vena cava and the metastasis to the right auricle.

Invasion of the blood vessels is characteristic of primary carcinoma of the liver and spread of the condition by the hematogenous route is common. The portal radicles are invaded earlier and more frequently than the branches of the hepatic vein or artery. This explains the rapid spread of the tumor within the liver and the late appearance of extrahepatic metastases. Complete obliteration of the inferior vena cava by a tumor thrombus is rare. Of the seventy-eight cases reported up to 1924 the thrombus was derived from a primary carcinoma of the liver in only seven. In the remaining seventy-one it had its origin in a malignant growth of the kidney or suprarenal gland.

Secondary involvement of the heart by a metastatic tumor which is also uncommon, is usually the result of dissemination by the hematogenous route. *LEWIS & W. TORROFF M.D.*

Harding, H. E. The Functions of the Epithelium of the Gall Bladder. *Gynaecol. Rep. Lond.* 1934, LVIII, 80.

The author gives a critical discussion of the work that has been done by others on the functions of the epithelium of the gall bladder and reports the findings of his own investigations.

He states that under normal conditions the mucosa of the gall bladder secretes mucus, probably with alkali, but apparently no other substance. It therefore has functions both of absorption and secretion. As it shows only one type of epithelial cell, one and the same cell is evidently able to pass materials in two opposite directions—both secretes into

the lumen of the organ and absorbs from that lumen. Harding regards it as doubtful whether any other simple epithelium functions similarly in two opposite directions, but suggests that this may be the case in the intestine. *EARL O. LATIMER, M.D.*

Bulason, P.: The Problem of the Emptying of the Gall Bladder (*Sul problema dell'evacuazione cecolare*). *Radiol. med.* 1934, XVI, 393.

Bulason states that, judging from published reports, cholecystography has rendered the problem of the mechanism of the emptying of the gall bladder more complicated instead of solving it. Following a discussion of some of the theories which have been advanced to explain the physiology of gall-bladder emptying, he concludes that the emptying results from the contractive activity of the musculature of the gall bladder. In support of his conclusion he presents evidence which he obtained in a study of normal or only mildly diseased gall bladders with the use of egg yolk and roentgen examination. In this study the important findings of which are shown by roentgenograms, it was found that filling of the hepatic or common duct took place simultaneously with a decrease in the size of the shadow of the gall bladder and with filling of the cystic and common ducts. Retrograde filling of this canal suggested not only hermetic closure of the mouth of the common duct where the common duct empties into the duodenum (contraction of the sphincter of Oddi) and filling of the duct to its maximum distention and capacity, but also a *vis-à-tergo* due to contractile activity of the gall bladder. *ERNEST T. LEWIS, M.D.*

Toroff, A. S. W.: Acute Cholecystitis. *A. S. Surg.* 1934, XXX, 900.

The author states that acute inflammatory changes may be present in the gall bladder of a patient who presents only minimal or no clinical manifestations at the time of operation. The pathological changes found by him in seventy-five such cases ranged from simple acute to hemorrhagic, phlegmonous suppurative, and gangrenous inflammation, empyema, perforation, and pericholecystic abscess. In general the patients with minimal manifestations showed a considerable higher incidence of advanced and progressive lesions than the patients without manifestations at the time of operation. Eighty per cent of the lesions in the series were considered conservatively to be subsiding or capable of subsiding. The remaining 20 per cent were considered progressive. It is impossible to determine the exact nature and extent of the inflammatory lesion before operation. In cases of acute cholecystitis in which subsidence once begun does not proceed uninterceptedly fairly promptly and completely, early operation is indicated. In cases of acute cholecystitis with subsided clinical manifestations, operation, early rather than late in the interval, is indicated because of the danger of the existence of a silent acute lesion.

Graham, H. F. and Waters, H. S.: Important Factors in the Surgical Treatment of Cholecystitis. *Ann Surg* 1934, xciv, 893

The authors are convinced that a definite well planned routine is essential for successful operative treatment of cholecystitis. They report sixty gall bladder operations with four deaths. Pulmonary and cardiac complications are those most to be feared. For reduction of the incidence of pulmonary complications the authors give the following rules:

- 1 Eliminate the bladder
- 2 Avoid large doses of the barbiturates.
- 3 Use morphine in moderate doses for the relief of pain.
- 4 Place the patient in the sitting position to aid the accessory muscles of respiration and take the weight of a heavy abdomen off the diaphragm.
- 5 Give inhalations of carbogen for five minutes every two hours for at least twenty four hours
- 6 Teach the patient to breathe deeply every fifteen or twenty minutes

7 Prevent chilling
The administration of carbohydrates both by diet and by the intravenous injection of glucose immediately before the operation is indicated because of the usually associated hepatitis

The authors emphasize the importance of early operation in cases of acute cholecystitis.

G DANIEL DELPRAT M.D

Heuer G J: The Factors Leading to Death in Operations upon the Gall Bladder and Bile Ducts. *Ann Surg* 1934, xciv, 881

Heuer urges early operation for non malignant disease of the gall bladder and bile ducts. In a review of 3663 cases reported by 21 surgeons he found that the mortality ranged from 3.6 to 10.4 per cent and averaged 6.6 per cent. In 174 cases of acute inflammation of the gall bladder in which cholecystectomy was done by 8 surgeons, the mortality ranged from 4.7 to 25.5 per cent and averaged 8.7 per cent whereas in 502 cases of perforation of the gall bladder which were operated upon by 20 surgeons it ranged from 15 to 65 per cent and averaged 46 per cent. Therefore operation should be done before perforation or gangrene occurs. These complications may be expected in about 50 per cent of cases.

For cases in which the common duct has been opened, Heuer advises drainage of the common duct through the stump of the cystic duct. He believes that neither care in the use of a general anesthetic nor the selection of spinal or local anesthesia nor postoperative over ventilation will prevent pulmonary complications with certainty.

Following a survey of the literature the author gives a detailed review of 200 cases of acute cholecystitis which he operated upon during the last sixteen months at the New York Hospital. Three of the patients died of pulmonary complications, 1 of cardiac failure, and 1 of acute pancreatitis.

G DANIEL DELPRAT M.D

MISCELLANEOUS

Cuendet S: Traumatism of the Large Venous Trunks of the Abdomen (Traumatisme des gros troncs veineux de l'abdomen) *Rev méd de la Suisse Rom.*, 1934, p 302.

Most hemorrhages of traumatic origin within the abdomen are due to tears of viscera such as the liver, spleen, or kidney, or of the mesentery. Injury to the large vessels is comparatively rare. Injury to the large arteries causes death so rapidly that surgical intervention is impossible.

The author reports four cases of injury of a large venous trunk in the abdomen.

The first case was that of a man twenty five years of age who drove a small chisel 9 or 10 cm into the upper abdomen. Exploratory laparotomy revealed a perforation of the superior mesenteric vein and of one of the collateral veins. The former was sutured and the latter ligated.

The second case was that of a woman thirty two years of age who sustained a tear of the vena cava when she was run over by a heavy vehicle. The bleeding was stopped by suture of the vein. Transfusion was necessary because of the severity of the hemorrhage.

In the third case the bleeding occurred from a rupture of the right external iliac vein which was associated with a fracture of the pelvis. The vein was sutured.

In the fourth case the inferior vena cava was opened in the course of a nephrectomy. The vein was sutured also in this case.

These reports are instructive as they show the possibilities of surgical interference in wounds of the abdominal venous trunks and demonstrate that circulatory difficulty following suture of these vessels is not common.

MARK W POOL, M.D

Roux, C.: The Ilia Fossa Tumors, Ulcers, Strictures (Dans la fosse iliaque et a propos de tumeurs, ulcères, rétrécissements) *Rev méd de la Suisse Rom* 1934 p 164

Roux states that many conditions giving rise to difficulty in differential diagnosis occur in the region of the iliac fossa. In this article he deals chiefly with the differentiation between the more chronic conditions such as adenoma, sarcoma, carcinoma, and ileocecal masses arising from chronic inflammation, tuberculosis, syphilis, and actinomycosis. He calls attention to the difficulty that may be encountered in the differentiation between a mass due to tuberculosis and a mass due to syphilis, and to the frequency of syphilitic lesions of the gastrointestinal tract.

Four cases of ileocecal conditions are reported—two cases of tuberculosis (one a case recorded by Calame) a case of a mass which was probably due to syphilis and a case of intussusception caused by a small mass in the intestinal wall which was also believed to be of syphilitic origin.

MARK W POOL, M.D

uterus can be initiated by the intraperitoneal administration of hypophyseal extracts or the intra muscular transplantation of bits of the anterior lobe of the hypophysis of cattle.

Attempts to produce cancer-like lesions of the cervix by superimposing inflammation by the repeated local application of tincture of iodine or a 5 to 20 per cent solution of silver nitrate to the cervical lesions in guinea pigs treated with hormones yielded only negative results.

EDWARD L. CORNELL, M.D.

Leveuf J. and Godard H.: The Lymphatics of the Body of the Uterus. An Anatomical and Anatomopathological Study. Pelvic Phlegmons. Cancer of the Body of the Uterus (Les lymphatiques du corps de l'utérus. Etude anatomique et anatomo-pathologique. Phlegmons pelviens. Cancer du corps de l'utérus). *Presse méd.* Par. 1934 xlii, 373.

In past reports of studies of the uterine lymphatics the authors gave descriptions which differ radically from those found in the standard textbooks on anatomy. In this article they present clinical evidence to substantiate their views.

According to the standard descriptions, the chief lymphatics draining the body of the uterus are associated with the ovarian artery and terminate in the lumbar lymph nodes. An accessory group of vessels accompanies the uterine artery to the iliac lymph nodes, and an unconstant lymphatic terminates in the inguinal group of lymph nodes.

By means of injections of the body and cervix of the uterus (twenty-three specimens of the former, sixty of the latter) it was found that the deep lymphatics of these two segments are entirely independent. As regards the body of the uterus, the site of the injection determines in some degree the lymphatic channels followed by the injected medium. When the fundus of the uterus of a newborn infant is injected the ovarian pedicle appears to be the most important, but if care is taken to limit the injection to about the middle of the anterior wall, the medium passes into the lymphatics about the uterine artery often without entering any of the others. These lymphatics follow the uterine artery divide to pass about the umbilical artery, and terminate in a node which is situated beneath the external iliac vein at about the middle of this vessel. Occasionally the node is somewhat lower in contact with the obturator nerve. This lymphatic route has no doubt been observed before. Poirier describes it simply as an anastomosis between the lymphatics of the body and the cervix. A similar description has been given by Cunéo and Biarcelle, Gerota, and Rouvière.

In reality there are no separate collectors for the body of the uterus, the lymphatics of this segment uniting with those of the cervix at the isthmus. In this way the principal channel is formed which may be injected, as described, from the body of the uterus.

The pathological anatomy of pelvic infections throws considerable light upon the lymphatic drain-

age of the uterus. The older literature contains the reports of numerous studies of the pathology of puerperal sepsis which show that phlegmons almost invariably occupy the bases of the broad ligaments and extend laterally in the cellular tissue termed by Farabœuf and Delbet the "hypogastric sheath." The infection of the uterine cavity never extends by direct continuity through the myometrium, but passes along the lymphatics (Lucas-Champagnon). When the infection has reached the bases of the broad ligaments it abandons the sheath of the uterine vessels (hypogastric sheath) and becomes localized between the obturator region and the base of the iliac fossa. This course can be explained only by the anatomical disposition of the lymphatics described. Involvement of the principal iliac gland, which the authors have noted, was long ago seen by Cruveilhier, Guérin and Lucas-Champagnon. Moreover there are reports of cases in which there was no inflammation between the uterus and the region of the obturator foramen. A study of the extensions of carcinomata of the body of the uterus leads with somewhat less certainty to the same conclusions as those drawn with regard to uterine infections.

The article contains four illustrations and four case histories. ALBERT F. DE GROAT, M.D.

Macafee, C. H. G.: A Critical Study of the Results of 122 Consecutive Hysterectomies. *J. Obst. & Gynec. Brit. Emp.* 1934, xli, 333.

In most of the 122 cases reviewed, the indication for the hysterectomy was fibromyomata associated with abnormal bleeding. Total hysterectomy was performed in 63.3 per cent and subtotal hysterectomy in 37.7 per cent. During the past year the author has performed the total operation in over 90 per cent of his cases. He prefers it to the subtotal operation whenever it is possible.

In the cases reviewed there were 2 deaths, a primary mortality of 1.6 per cent. One patient had a secondary hemorrhage from the vault of the vagina and another developed an abscess in the vault of the vagina. There were no other unusual complications.

Menopausal symptoms after bilateral oophorectomy were severe in only 3.3 per cent of the cases and absent in 34 per cent. The most common symptom was flushing, which began soon after the operation. The number of patients in whom one or both ovaries were conserved is too small to warrant very definite conclusions as to the time of appearance of menopausal symptoms. CARL H. DAVIS, M.D.

ADRENAL AND PERIUTERINE CONDITIONS

Aron M.: The Histology and Physiology of the Ovary (Histologie et physiologie de l'ovaire). *Rev. franç. de gynéc. et d'obst.* 1934, LVII, 295.

Following a review of the embryology and anatomy of the ovary the author takes up the physiology of the ovary, reviewing very extensively the work done in various countries and especially the in-

vestigations of Stockard and Papanicolaou in 1917 and of Allen and Doby in 1935. He then discusses the ovarian hormones folliculin and progesterin, the relationship of these hormones to menstruation and the important influence of the anterior lobe of the pituitary gland on ovarian activity.

ISAAC ANDRUSSIER, M.D.

Lévi, L. The Reciprocal Actions of the Ovary and the Thyroid Gland (*Actions reciproques des ovaires et du corps thyroïde*). *Rev. franç. de gynéc. et d'obst.* 1934, xxx, 362.

The author discusses the reciprocal actions of the ovaries and thyroid with regard to (1) the physiopathology of menstruation, (2) delayed puberty and precocious menopause, and (3) premature senescence of the organism.

ISAAC ANDRUSSIER, M.D.

Violet, H. Clinical Study of Ovarian Insufficiency (*Étude clinique de l'insuffisance ovarienne*). *Rev. franç. de gynéc. et d'obst.* 1934, xxx, 936.

The author first discusses ovarian insufficiency caused by surgical or X-ray castration and resulting in vasomotor, metabolic, and psychic disturbances of the menopause. He then describes the disturbances resulting from relative ovarian insufficiency. The latter include disturbances of the reproductive function such as sterility and abortion, disturbances of menstruation and disturbances of sympathetic function, such as leucorrhoea, membranous dysmenorrhoea and obesity.

ISAAC ANDRUSSIER, M.D.

Laroche, G. and Neura Blatter, L. Medical Treatment of Insufficiency of the Ovary (*Traitement médical de l'insuffisance ovarienne*). *Rev. franç. de gynéc. et d'obst.* 1934, xxx, 513.

After calling attention to the fact that ovarian treatment is not indicated in all disturbances of menstruation, the authors discuss the various agents which may be used in the treatment of amenorrhoea, hypomenorrhoea, and oligomenorrhoea. These conditions may occur in young girls at the beginning of menstrual life, in women in the period of sexual activity and in women at the menopause. In the first two groups stimulation of ovarian function is indicated, and in the last group substitution. Hygienic and hydrotherapeutic measures and various emmenagogues may be used, but the modern tendency is to employ opotherapy extensively in the treatment of these conditions.

There is a great variety of opotherapeutic products on the market. Their biological dosage and methods of standardization are discussed by the authors at some length. Folliculin is now sold in crystalline form with an international unit of dosage.

As the hypophysis is a regulator of ovarian function, extract of the anterior lobe of the hypophysis is indicated in many cases of delayed and irregular menstruation in young girls. It has a more gentle and more physiological effect than folliculin in these cases. Given soon after the menstrual period it activates the follicle and given from ten to

twelve days preceding the next period, it acts on the corpus luteum. The authors now prescribe two series of doses—one from the eighth to the seventeenth day after the beginning of the period, and one, eight days before the next period. An effort should be made to reproduce the physiological ovarian stimulation. Extract of the anterior lobe of the hypophysis does not advance the period as does folliculin. It regulates the periods and overcomes the pain and other disagreeable subjective symptoms. The duration of the improvement varies. As a rule a second series of injections must be given after a few months. Sometimes, following a few series of injections, the extract becomes ineffective and must be administered in larger doses or with some other hormone such as folliculin, thyroid, or lutin. There are few contra-indications to its use, but it should not be given to women with pelvic inflammation as it provokes congestion.

Folliculin is effective in many cases of hypomenorrhoea and dysmenorrhoea. Its use is a substitution, not a stimulation, treatment. It should be discontinuous and not very prolonged. Unfortunately for biological reasons as yet unknown, its action is irregular.

Successive doses of folliculin and lutin may bring on menstruation in castrated women. Kaufmann obtained good results in amenorrhoea by giving doses of 50,000 mouse units of folliculin twice a week for two weeks and then from 25 to 50 rabbit units of lutin for five days. In some cases folliculin should be supplemented with other hormones such as those of the thyroid or suprarenals.

Successive injections of folliculin and lutin are indicated in the artificial menopause or the premature natural menopause when there is hope of stimulating the ovary to renewed activity.

Folliculin has been used successfully in animals to overcome sterility and in large doses, has yielded good results in clinical cases of sterility in which there was a disturbance of menstruation. In clinical cases of sterility not associated with disturbances of menstruation the treatment of choice seems to be the administration of moderate doses of extract of the hypophysis.

ANDRÉ GOSSE MOROAN, M.D.

Lehmann, P. Physiotherapy of Ovarian Insufficiency (*Physiothérapie de l'insuffisance ovarienne*). *Rev. franç. de gynéc. et d'obst.* 1934, xxx, 573.

There are two groups of physical agents to be considered. The action of one group is due to reflexes resulting from their application to the skin, while that of the other is more direct, being due to the transportation or transformation of energy within the tissues. Among the first group are thermotherapy, actinotherapy with ultraviolet and infrared rays, the high frequency current, static electricity, and massage. Among the second are the use of the continuous or faradic current, short waves, and roentgen and radium therapy. While the action of irradiation is chiefly direct, it has also a series of indirect effects.

The author describes in great detail the technique of the application of these different methods of physiotherapy. He concludes that physical agents, particularly the roentgen rays, are of considerable importance in the treatment of insufficiency of the ovary. Stimulating radiotherapy of the ovaries seems to be the best form for primary insufficiencies and radiotherapy of the hypophysis for insufficiencies of the menopause. The other physical agents are valuable adjuncts to medical and opotherapy. The essentials for successful results from physiotherapy are accurate diagnosis and a detailed study of the causes of the insufficiency to be treated.

AUDREY GORE MORGAN, M.D.

EXTERNAL GENITALIA

Cruikshank, R., and Sharman, A. The Biology of the Vagina in the Human Subject. *J Obst & Gynec B N Emp* 1934, 24, 369.

The authors report the results of an investigation of the cause of leucorrhoea in the virgin. They studied particularly cases of non infective origin. In these cases the discharge was white, thick, and cheesy and Döderlein's bacilli were obtained on culture. In most of the cases treatment was unsatisfactory as spontaneous remissions occurred. Such procedures as dilatation, curettage, cauterization of the cervix, and treatment with antiseptics seem contra-indicated because of the possibility of the introduction of infection. In many of the cases studied there were signs and symptoms of endocrine imbalance but treatment with available endocrine preparations was not effective.

The non infective discharge in the virgin is evidently an excess of normal vaginal secretion. The authors consider it pathological, whereas they regard such a discharge during pregnancy as normal. In a previous article they called attention to the correlation of the vaginal discharge with the presence of glycogen in the vaginal epithelium and the dependence of this deposition of glycogen upon the secretion of female sex hormone. They suggest that the non-infective discharge in the virgin may be due to an imbalance between the hormones of the anterior lobe of the pituitary gland and the ovaries.

LEONARD S. ACADE, JR., M.D.

Brindescu, A.: The Formation of an Artificial Vagina with the Aid of the Fetal Membranes of a Full Term Pregnancy (Création d'un agn artificiel à l'aide des membranes ovulaires d'un foetus à terme). *Gynec et Obst* 1934, 133, 385.

The case reported was that of a girl of nineteen years who in addition to an anomalous development of the thumbs and spine bifida occulta, presented several interesting developmental anomalies of the genitalia. Menstruation had occurred regularly since the age of thirteen years, but the menstrual blood was discharged only at the time of micturition. The clitoris, which was enlarged to the size of the small finger and was surrounded by a complete prepuce,

resembled closely a small penis. The labia minora were joined together in the midline and covered the underlying structures. The labia majora were quite normal. About 1½ cm. above the anus there was a small circular orifice with a regular border which permitted the introduction of a sound for some distance. Rectal examination under anesthesia revealed a small, mobile uterus in the normal position. The ovaries could not be felt. The labia minora were easily freed at the point where they were grown together. A catheter introduced into the orifice mentioned and directed toward the pubes entered the urinary bladder. About 1 cm. within the orifice there was a small blind pouch which was separate from the tract leading to the bladder. This was believed to be a rudimentary vaginal canal.

An artificial vagina was constructed in a unique manner by using fetal membranes obtained from a patient subjected to cesarean section. After the introduction of a sound into the urinary bladder a transverse incision was made through the small orifice. This disclosed a small cul-de-sac with what appeared to be normal vaginal mucosa which permitted the introduction of the small finger. The sound entered the urinary bladder, the neck of which could be definitely identified and functioned normally. No cervix uteri could be identified.

Separation of the bladder from the rectum left a cavity about 5 cm. deep which probably extended to the vicinity of the cul-de-sac of Douglas. This cavity was lined with a pouch of fetal membranes. The pouch was attached at the upper end with catgut sutures and at the lower end was sutured to the skin of the perineum. The new canal, which permitted the introduction of two fingers, was tamponed with gauze soaked in antiseptic boric serum. A retention catheter was kept in the bladder.

The gauze was removed eight days later at a time corresponding to the expected date of menstruation. Normal menstruation occurred. The blood escaped from a small opening in the anterior wall of the new canal. The canal was found lined by a pink epidermis. The tamponade was continued for six weeks. At the end of that time the patient was discharged from the hospital in good condition. She was instructed to insert a No. 28 bougie into the vagina every day.

Except for some bladder incontinence on straining, the result was considered favorable. As the patient is soon to be married, the author looks forward to the opportunity to study the effects of pregnancy and labor in this case. Menstruation continues to be regular and painless.

HAROLD C. MACK, M.D.

MISCELLANEOUS

Rock, J.: Artificial Menstruation. The Effect of Female Sex Hormones in Amenorrhoea. *New England J Med* 1934, 111, 1303.

The author reviews the work of the various investigators who demonstrated the cyclic changes occurring in the endometrium of the mature human

female and correlated them with synchronous changes occurring in the ovaries. He discusses the work of Hartman and Corner on animals, especially that dealing with the production of a bloody discharge in spayed animals by the use of theelin alone.

He then reports studies which he carried out to determine the effect of deep gluteal injections of folliculin (Progynon B) alone and followed by corporin (Proluton B) on five women with amenorrhea of at least a year's duration. A very important check on the specific effect of the hormone preparations on the endometrium was a study of the findings of biopsy of the endometrium made before, during, and after the treatment in one case and before and after the treatment in three cases. Rock describes a modification of the Klinger and Burch suction technique.

Apparently normal menstruation occurred in four cases and slight staining in one case. In three instances the flow followed the injection of folliculin alone, and in four it occurred after the injection of folliculin followed by corporin. Seven instances of artificial menstruation in four patients were observed. The effect of the folliculin alone was to produce the proliferating phase of the endometrium whereas that of the folliculin combined with corporin was to produce a true secretory state. As relatively large doses of hormones (50 000 rat units of folliculin and 50 rat units of corporin) were necessary to induce the various changes in the endometrium the cost of effective treatment is prohibitive.

In the author's opinion his studies showed that, in the human female, proliferation of the endometrium is caused by folliculin secretory activity of the glandular epithelium is a specific corporin effect and anovulatory flow is possible. A. F. LASS M.D.

Lassen, H. C. A. and Brandstrup E.: Serial Studies on the Occurrence of Prolan A and B in the Urine of Women Castrated by X Ray Treatment or Operation. *Acta obst et gynec Scand.*, 1934 xiv 89

In previous investigations it was found that on impairment or cessation of the gonad function the urine shows an increased output of the follicle-stimulating hormone of the anterior lobe of the hypophysis, Prolan A whereas the presence of the luteinizing hormone Prolan B is demonstrated but seldom and in only small amounts on the injection of concentrated urine.

The authors studied the urine of 36 women who had been castrated by X ray treatment and 10 women who had been castrated by operation. Their purpose was to determine how often the urine of female castrates contains so much Prolan B that the usual routine Aschheim Zondek test gives a positive pregnancy reaction. The technique they employed is described in detail. They performed 436 tests for prolan in the urine after castration testing about once a month for from three to thirty one months. Prolan could be demonstrated only when it was present in amounts above 400 mouse units per liter of urine according to their technique.

In the cases of the X ray castrates the Prolan A reaction was positive in about 30 per cent of the urinespecimens (343) examined after the irradiation whereas the Prolan B reaction was positive in only 7 per cent. The frequency of the Prolan A reaction was almost the same throughout the observation period, whereas the incidence of the Prolan B reaction was highest (11 to 12 per cent) during the first half year after the castration. Ninety two per cent of the women excreted Prolan A in amounts above 400 mouse units per liter of urine and 44 per cent excreted a similar amount of Prolan B at some time or other after the castration. The incidence of the positive Prolan A reaction appeared to increase with the observation period, whereas that of the Prolan B reaction was highest in the first six months after the castration and was especially high 24 per cent in the first three months.

In the cases of surgical castrates, a positive Prolan A reaction was found in about 50 per cent of the urine specimens examined after the operation and a positive Prolan B reaction in 9 per cent. The prolan reactions were most frequent during the first six months after the operation. All of the women excreted Prolan A in amounts above 400 mouse units per liter of urine at some time or other after the operation. In the control material suitable for comparison, the incidence of the Prolan A reaction was 15 per cent and that of the Prolan B reaction from 1 to 2 per cent. In the cases of 63 climacteric women, the incidence of the Prolan B reaction was 14 per cent. A. F. LASS M.D.

Ahlborg G. A Contribution to the Question of Operative Treatment of Genital Prolapse. *Acta obst et gynec Scand* 1934 xiii, 368

The author has re-examined 104 women operated upon for genital prolapse at the Gynecological Clinic of the Academic Hospital at Upsala in the period from 1924 to 1931.

He gives a detailed description of the operative method employed, viz., anterior colporrhaphy and colpoperineorrhaphy with a high levator suture with or without amputation of the portio vaginalis.

In recording the character of the prolapse use was made of a code system in which the descent, elongation and lesion were indicated by letters and numbers.

In half of the cases there were slight lesions, and in one fourth medium lesions, of the levators. A certain relationship could be traced between levator lesions and descent of the uterus and between retroflexion of the uterus and lengthening of the cervix but none could be demonstrated between the degree of the levator lesion and the descent of the vaginal wall nor between flexion of the uterus and the degree of its descent. The degree of the levator lesion showed no relationship to the number of past deliveries, but the frequency of levator lesions was higher in primiparae of advanced age than in other women. No parallelism could be demonstrated between primiparity at advanced age and marked

prolapse nor between early primiparity and slight prolapse.

Ninety five of the 104 women whose cases are reviewed were re-examined on an average four years and seven months after the operation. Of these, 86 (90.5 per cent) were completely cured, 3 were benefited, and 7 (7.4 per cent) were not cured. If only the objective examinations—76 in all—are included, 70 (92 per cent) of the women were completely cured, 1 was benefited, and 6 (6.6 per cent) were not cured.

The frequency of recurrence is no greater in cases with marked descent of the anterior vaginal wall than in others. More caution is necessary in the prognosis in cases with severe levator lesions than in others. The prognosis is less favorable for women between the ages of thirty and fifty years than for either younger or older women. The results are considerably better when the operation is performed by a surgeon experienced in its technique. Recurrence is more frequent when the operative wound heals by second intention. A local anesthetic does not seem to affect the healing of the perineal wound.

Six of the patients whose cases are reviewed had 11 deliveries after the operation. In 2 of them the prolapse recurred.

The study of these cases led to the following conclusions:

1. Amputation of the vaginal portion of the cervix may cause premature delivery in subsequent pregnancies.

2. Labor after a plastic operation on the pelvic floor will not be appreciably longer than normal.

3. Careful supervision in the hospital during labor, particularly when the head has reached the pelvic floor and early extensive perineotomy are of importance. If necessary pelvic-outlet forceps should be used to control the rapidity of emergence. Special care is indicated in cases in which anterior and posterior colporrhaphy combined with amputation of the portio has been performed.

4. Anterior colporrhaphy and colpoperineorrhaphy combined if necessary with amputation of the vaginal portion of the cervix usually relieves the patient from distress, is easy to perform and practically without risk, and leaves the genital functions absolutely unimpaired.

Durst, F.: Suppurative Diseases of the Female Genital Organs Perforating into the Bladder. Eight Cases, Including One Case of Actinomycotic Parametritis. (*Das eitrige in die Harnblase perforierten Erkrankungen der weiblichen Geschlechtsorgane. Acht Fälle darunter 1 Fall von Parametritis actinomycotica*) *Lipsch. wissensch.* 1933, IV 490.

The author first reviews all cases of suppurative diseases of the female genital organs perforating into the bladder which have been reported in the older and the more recent literature and discusses the frequency of these conditions, the methods of treat-

ment, and the end-results. He states that Goth of Kolosvar found 1 case of perforation into the bladder among 700 cases of adnecitis, and Arn found 5 such cases among 318 cases of inflammatory adnexal disease. In 1911 Zurbelle collected 19 cases from the world literature. Jann of the Jerle Clinic at Prague reported 6 cases, and Matusovall of the Harmony Clinic at Budapest and Levicki of the Serdukov Clinic at Moscow each reported 3 cases. Delbet, who collected 1,000 cases of suppuration in the pelvis, found that perforation occurred into the rectum in 12 per cent, into the bladder in 5.22 per cent, into the vagina in 4.50 per cent, and through the skin in 3.22 per cent. According to Freund, perforation into the bladder is most frequent in septic conditions, next most frequent in tuberculous conditions, and least frequent in gonorrheal processes. Others have come to different conclusions. Among 4,000 cases of puerperal disease, Levitsky found no perforation into the bladder.

The author regards most of his 8 cases as septic. The excitants were pyogenic cocci and colon bacilli, and the processes were of puerperal origin. The series included 1 case of actinomycotic parametritis, 1 case of tuberculosis, and 3 cases which, according to the history, were probably gonorrheal with secondary infection by bacteria other than gonococci.

The site of perforation depends on the site of the abscess. Adnexal suppurations perforate into the anterior and upper wall of the bladder, while parametric processes usually perforate laterally. Some times there are several sites of perforation. The resulting cystitis is not general but circumscribed.

The objective symptoms are minimal. With imminent perforation some of the patients complained of painful micturition, pollakiuria, or marked tenesmus. After the occurrence of the perforation all of these symptoms ceased. The pyuria was overlooked by some patients. On cystoscopic examination, imminent perforation is indicated by a bulging edema at the site where the perforation will occur. The completed perforation is always visible in the cystoscopic picture.

The prognosis varies. If the site of perforation is sufficiently large and the condition is a parametrial abscess which can be sufficiently evacuated, spontaneous healing may result, but in perforating adnexal diseases spontaneous healing is rare. Operation should be delayed for some time after subsidence of the symptoms of acute inflammation. Operation is much more dangerous than in closed adnexal suppurations as the pus excitants retain their virulence. Parametric abscesses should be incised parallel with Poupart's ligament, above the symphysis or vaginally and adnexal suppurations approached abdominally or vaginally and extirpated.

The author reports his 8 cases in detail. A tubovarian abscess and 2 large ovarian abscesses were cured by laparotomy. In 1 case total extirpation was done with bilateral adnectomy. In 3 cases only a unilateral adnectomy was performed. Drainage was always established through the vagina.

In 1 case it was established also through the abdominal wound. In 1 case the abscess perforated directly through the anterior wall into the bladder, and in 2 cases, in which it was located in the pouch of Douglas, it perforated in a roundabout way through the base of the broad ligament and the parametrium. In 4 cases there was perforation of parametrial abscesses. The patients had been sick for from one to seven months. According to the site of the suppuration, an incision was made and drainage established parallel with Poupert's ligament in 2 cases, once above the symphysis and once in the lateral vaginal wall. In 3 cases recovery was smooth, and in 1 case it was delayed.

Of most importance is the report of a case of actinomycosis of the genitalia which was proved by cultures. Perforation into the bladder had already taken place when the patient entered the hospital, and during her stay in the hospital rupture occurred in the region of the umbilicus. An incision was made above the symphysis and excoriation and drainage were effected. Perforation occurred also into the rectum. The treatment included the application of iodine, to the wound, the administration of iodine by mouth, and roentgen irradiation. This treatment was followed by closure of the vesical and rectal fistulae. A moderate infiltration was felt around the site of the incision above the symphysis. The patient was discharged at her own request. Today after two years, her general condition is good. Menstruation never returned. There is a small infiltration above the symphysis. The fistula at the site of the incision suppurates moderately. The urine is clear and negative for albumin. On cystoscopic examination the sites of the perforations into the bladder and rectum are no longer evident. The uterus is retroverted and movable. The parametrium is slightly rigid. The patient was asked to return for additional treatment with radium which the author considers, next to the roentgen rays, the most valuable agent in the treatment of actinomycosis in the female. VILMA JANICH RAJEVICH (G)

Phillips, R. D.: Endometriosis Vesicæ. *J. Obst. & Gynec. Brit. Emp.* 1934 xli 165

The author reports a case of endometriosis of the bladder in a woman forty years of age. The symptoms had been present for two years. The condition was cured by X-ray irradiation over the ovaries producing destruction of the parenchyma. The patient suffered also from involvement of the lower ileum with gastro-intestinal symptoms. The case is reported in detail, with illustrations showing the condition of the bladder before and after treatment.

In cases of this type, frequency of urination, hematuria and dysuria recur as the endometrial tissue of the tumor approaches the menstrual type of endometrium in correspondence with the uterine endometrium. These symptoms, together with the cystoscopic findings of blue-black cysts, endometriotic edema and usually an inflammatory reaction are a reliable guide to the diagnosis. Inflammatory

reaction is common in endometriosis found outside the uterus.

The treatment of the condition includes two methods (1) complete removal of the tumor and (2) destruction of the ovaries by X-ray or radium irradiation. The first method is preferable in the cases of young women who desire children and in whom complete removal of the tumor is possible. The second method is indicated in the cases of women near the menopause and those in which complete removal of the tumor is impossible because of the extent of the growth or the patient's general condition. X-ray irradiation is usually preferable to radium irradiation and gives immediate and striking results. Each ovary is treated with from 45 to 50 per cent of an erythema dose in two treatments from ten to fourteen days apart. HENRY S. ACKER, JR., M.D.

Castagna: Histochemical Research on the Glycogen Content of Tumors of the Female Genitalia and Considerations of Its Functional Significance. (*Ricerche Isto-chimiche sul contenuto in glicogene nei tumori della sfera genitale femminile, e considerazioni sul suo significato funzionale*) *Arch. di ostet. e ginec.* 1934, xli 224.

Castagna reports a series of investigations carried out in twenty-four cases of tumor of the female genitalia in an attempt to ascertain and interpret variations in the cellular metabolism of benign and malignant neoplasms.

For this work he employed the histochemical technique of Jura, a colorimetric method based upon the action of ammoniacal nitro-prusside on certain cellular elements, i.e. tripeptid depending upon the amount of glycogen present.

The results showed that fibroids, benign ovarian cysts, and normal epithelium have a color index of 9 or 10 when compared with Jura's standard while carcinoma epithelioma and chorionepithelioma have a color index of 7 or 8.

In the slides containing both normal and malignant cells the color changes contrasted sharply.

Castagna states that, as the element of error is very great conclusions should be drawn with caution. GEORGE C. FINOLA, M.D.

Desplats, R.: Gynecological Applications of Radiotherapy of the Sympathetics and the Endocrines. (*La radiothérapie fonctionnelle sympathique et glandulaire dans ses applications gynécologiques*) *Gynécologie* 1934, xxviii 37.

In addition to its well known destructive action on neoplasms, radiotherapy exercises important effects on the organism by causing changes in humoral, metabolic, and vasomotor functions. The functional effects which are of benefit in derangements of the sympathetic nervous system and the glands of internal secretion are of importance in gynecology. They generally parallel the destructive action of the roentgen rays, but may be obtained also by the administration of feeble non-destructive dosages of irradiation.

The author has studied these effects over a period of six years and is convinced by reports in the literature and his own experience that the indications for radiotherapy in gynecology are constantly increasing. Three distinct types of gynecological conditions have been favorably influenced by irradiation: (1) amenorrhea and sterility; (2) menstrual disorders; and (3) disturbances of the menopause. In three of thirty-eight cases of amenorrhea and sterility in which Thaler and Flatau applied small stimulating doses of X-ray irradiation to the ovaries, menstruation was re-established and subsequent pregnancies occurred. Lusenmeier has reported two similar cases. Menstruation was re-established also in twenty-seven of forty-seven cases in which Ford combined irradiation of the pituitary gland with irradiation of the ovaries, and in seven of the former pregnancy occurred subsequently in women previously sterile. The author believes that the same effects can be obtained by irradiation of the splanchnic areas and the suprarenal capsules without endangering the ovaries.

Gouin and Bienvenue, the originators of irradiation of the lumbar sympathetics for menstrual disorders, especially dysmenorrhea, believe that the curative effects are obtained by re-activation of the normal regulatory mechanism of the pelvic organs. They emphasize the necessity for accurate diagnosis of sympathetic dysfunction, as evidenced by facial acne, genital eczema, and pruritus vulvae, before irradiation therapy is attempted. After from twenty-four to forty-eight hours the irradiation is followed by a series of general reactions characterized by fatigue, headache, vertigo, visual disturbances, nausea, vomiting, chills, uterine cramps, and occasional elevations of the temperature. During

this period of reaction, uterine bleeding ceases, either abruptly or gradually but from four to six days after the irradiation normal menstruation reappears. When the cycle is normal but the quantity of the flow is diminished or increased, the cycle is usually not modified, but the amount of the flow is favorably influenced. The best effects are said to be obtained when the irradiation is done one week before the expected period. When the cycle is abnormal or absent, the normal rhythm is usually re-established. Concomitant dermatoses are usually corrected much more promptly than the menstrual disturbances themselves. The author has obtained the same results in the treatment of menstrual disturbances by irradiating the suprarenals alone. In certain cases he has added irradiation of the pituitary gland with moderate doses (3,000 r) over a period of fifteen days.

Symptoms of the menopause (vasomotor disturbances, hot and cold flashes, rheumatoid pains) cannot all be cured by irradiation. Irradiation of the lumbar sympathetics (Gouin and Bienvenue) and of the pituitary and thyroid glands (Borax) have been partially successful. The author has noted no permanent relief of hypertension from irradiation of the adrenals and pituitary gland as reported by Solomon, but has observed relief of vasomotor disturbances after irradiation of the adrenals alone. The finding of Hoet that irradiation of the pituitary gland for menopausal symptoms is followed by a diminution of the content of follicular hormone in the urine he regards as of great biological importance. He believes that irradiation will prove of great value to the gynecologist in the treatment of the symptoms of the menopause.

HAROLD C. BLACK, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Wrigley A. J : A Criticism of Antenatal Work.
Brit. M. J., 1934, 1, 891

In discussing antenatal work with regard to the toxemias, Wrigley calls attention to the fact that, of the last 7 000 women who were under observation at the General Lying In Hospital, London, during pregnancy only 6 developed eclampsia, and of the last 3 500 women who were under the care of the Clapham Maternity Hospital, only 3 developed this condition. Moreover the eclampsia was mild in all except 1 case and was fatal in none. On the other hand of 544 cases of death from eclampsia cited in the Report of the Departmental Committee on Maternal Mortality no examination of the urine was made in 277 and in 120 cases in which the urine had been examined no treatment had been given. Wrigley believes that if the statistics included cases of the milder toxic albuminuria of pregnancy the findings would be even less favorable. He is therefore of the opinion that the supervision of pregnant women is in general inadequate and too perfunctory and that women who neglect to make routine visits for examination should be called.

He believes also that the health of mind of the pregnant woman has not been sufficiently considered in antenatal work.

With regard to the problem of disproportion he discusses the induction of labor. According to his statistics, antenatal supervision has resulted in the diagnosis of a minor degree of disproportion in an enormous number of cases in which it was not present. He believes that the fetal mortality of 10 per cent was due to inability of the premature child to live rather than to tight fit of the head. In an analysis of maternal deaths in several obstetrical hospitals, Browne found that 1 in 70 of these deaths occurred as the result of the induction of labor. Wrigley therefore believes that the question "Can we induce labor?" should be replaced by the question "Should we induce labor?"

In Wrigley's opinion, the value of external cephalic version, especially of such version performed under anesthesia, has been overestimated and the manipulation may be harmful. In 2 London obstetrical hospitals 76 women were anaesthetized during pregnancy for the correction of a breech presentation. In the cases of 43 the version was successful insofar as a vertex presentation was obtained, but only 35 of the babies were born alive.

The author offers no criticism of antenatal care in relation to antepartum hemorrhage.

In regard to the care of the breasts Wrigley states that women are apt to develop an antipathy toward breast feeding if their attention is focused on the

breasts too much. He therefore prefers neglect to overact a care such as sponging with cold and warm water three times a day, the application of ointments, and the use of a brush for stimulation.

A. F. LAMB, M.D.

Robson, J. M. : Pregnancy Diagnosis in Theory and Practice. *Brit. M. J.* 1934, 1, 1063.

The source and physiology of the oestrogenic and gonadotropic hormones are discussed on the basis of the work of other investigators. Oestrin is found in the urine for some days after birth throughout the period of sexual activity and for at least several years following the menopause. The gonadotropic hormones are excreted in the urine for some days after birth and during the entire life cycle after the onset of puberty.

Although both of these types of hormones are markedly increased during pregnancy the tremendous increase in the gonadotropic hormone excreted is of diagnostic value in the early stages of gestation.

Following a description of the tests for the gonadotropic hormones and a discussion of the action of the hormones in the urine the author reports the results of an investigation of the accuracy of the Aschheim-Zondek and Friedman tests. As the Brouha test carried out on male mice did not give as reliable results as the other tests, it was not studied further. A test described recently (1934) by Bellerby is mentioned only briefly as further data are necessary for its evaluation.

The author describes the methods used at the Edinburgh Pregnancy Diagnosis Station for decreasing the toxicity and increasing the potency of the urine specimens.

According to a review of the literature made recently (1934) by Mack and Agnew the Aschheim-Zondek test was accurate in 98.6 per cent of 8 683 cases of pregnancy and the Friedman test was accurate in 98.5 per cent of 1,899 cases. At the Edinburgh Pregnancy Diagnosis Station the Aschheim-Zondek test proved accurate in 98.25 per cent of 3 151 cases. The accuracy of the Friedman test in 151 cases was about the same.

The author's findings also demonstrated that there is little difference in the reliability of the Aschheim-Zondek and Friedman tests.

As the tests indicate only the presence of gonadotropic hormones capable of producing certain changes in the test animals other conditions in addition to gestation may cause positive results. The various conditions requiring differentiation from normal pregnancy are ectopic gestation, hydatidiform mole, chorionepithelioma, malignant disease, the menopause, and operative and radiological

castration. A negative test in the presence of decidua tissue may occur in rare cases in which the tissue between the embryonic and maternal circulation is fibrous (Klein, 1933). In 1931 Philipp reported the occurrence of such fibrous in two cases of hydatidiform mole in which the Aschheim-Zondek test was negative. A F LASH M.D.

Ibáñez, A. I. L. Extra-Uterine Pregnancy (El embarazo extrauterino). *Rev. méd. quirúrg. de Méjico* feb. 1934, 4, 47.

Ibáñez analyzes sixty-seven cases of extra-uterine pregnancy which he operated upon in the last six years. He discusses the symptoms, differential diagnosis, operative treatment, prognosis, etiology, pathology and postoperative course of the different forms. In the cases reviewed there were no deaths. In 7.46 per cent the condition was recurrent. In one case there was a bilateral unruptured tubal pregnancy. The Aschheim-Zondek test was negative in the cases in which the embryo had been dead for from eight to ten days, but strongly positive in those in which the embryo was still alive.

With regard to the advisability of operating on patients in shock the author states that in his opinion it is preferable to delay intervention until improvement in the general condition has been brought about by anti-shock measures and transfusion. The best time for operation is the free interval before recurrence of the hemorrhage.

Of the author's patients who could be traced after the extra-uterine pregnancy, 50 per cent had subsequent normal pregnancies and 80 per cent remained sterile. The cause of the postoperative sterility is usually easy to diagnose, especially with the aid of uterosalpingography, but its treatment is successful only exceptionally. When the remaining tube is permeable the sterility is usually caused by malposition of the uterus, an endocrine disturbance, or hypo-ovarianism which is functional or due to organic lesions in the ovaries.

The article is supplemented by roentgenograms, brief summaries of the cases reviewed, and an extensive bibliography. M. E. MOXER M.D.

Sullivan, C. F., Tew, W. P., and Watson, E. M.: The Bilirubin Excretion Test of Liver Function in Pregnancy. *J. Obst. & Gynec. Brit. Emp.* 1934, 31, 347.

The authors report the results of 147 bilirubin excretion tests done in the cases of 80 women during pregnancy and after delivery. The bilirubin-excretion test is based on the elimination from the blood stream, presumably by the liver, of a given amount of bilirubin (proportional to the patient's weight) which was injected into the blood stream. Samples of blood are collected and tested before the injection and at intervals up to four hours after the injection. The technique of the test, which is not simple, is described.

In the cases of normal non pregnant individuals the average retention of bilirubin at the end of four

hours was found to be 5 per cent. This corresponded extremely well with the retention found during the first half of uncomplicated pregnancy. In the latter half of uncomplicated pregnancy, however, the average retention was 3 per cent, suggesting that there is usually some impairment of liver function as pregnancy progresses, even though there may be no clinical evidence of it. After delivery the retention returned to normal even in pathological cases. It is suggested that the so-called "low reserve kidney" has its analogy in the liver function.

In the cases of women with toxic manifestations and proved abnormal kidney function the retention of bilirubin was normal or less than normal. On the other hand there was a group of patients with toxic manifestations and no demonstrable aberration of kidney function in whom the bilirubin test showed a retention above the normal. However the authors believe that the field for this test is limited because of the difficulty in the technique and because of the slight difference between the abnormality exhibited during the latter half of normal pregnancy and that of the so-called hepatic toxemia. They are of the opinion that the test will prove of most value in the toxemia of early pregnancy.

HENRY S. ACKER, JR. M.D.

Paroli, G.: Possible Grave Complications of Pregnancy in Very Young Primiparae (Su possibili gravi complicanze per gravide in primipara giovanissime). *Arch. d. obst. e ginec.* 1934, 21, 200.

The author reports a case of eclampsia in a thirteen year-old primipara at term who was delivered successfully by low cervical cesarean section. After an uneventful postoperative course the patient died suddenly on the seventeenth day, apparently from embolism. However postmortem examination failed to demonstrate emboli in any part of the body.

Contrary to prevailing opinion, Paroli points out that grave complications may occur even in young primiparae. He believes that these patients tolerate cesarean section remarkably well.

GEORGE C. FROEA, M.D.

Rosenbeck: The Goals and Methods of Research Regarding Eclampsia (Ziele und Wege fuer die Eklampsieforschung). *Arch. f. Gynaek.* 1933, 171, 206 & 5.

The accumulation of sodium in the musculature of eclampsia again demonstrated by the author which evidently occurs under the influence of hypernatremia, brings about a chemical and physicochemical reaction milieu which favors an increase in the carbohydrate metabolism in the periphery. As the anaerobic reduction of glucose to lactic acid requires the assistance of the thyroid hormone, the increase of thyroid function found in eclampsia (Anselmino and Hoffmann, Eufinger and coworkers) is a demand reaction or a distress reaction in the sense in which this term is used by Cannon. According to Haflner the acceleration of the anaerobic

catabolic process in the musculature under the influence of thyroxin is brought about through stimulation of the peripheral sympathetic nerves. The visible manifestation of this peripheral sympathetic stimulation the author found in the increase in calcium in the musculature of eclampsia demonstrated by him previously and again recently which is evidenced clinically by a decrease in the galvanic irritability of nerves and muscles (Seltz Spiegler Rosenbeck).

Under normal conditions the thyroid gland the hormone of which is the activating principle of the glycogen releasing ferment complex in the liver is the stable continuous activator of sympathetic processes (Isaac and Siegel). When the increased function of the thyroid gland is insufficient to cope with the enormously increased carbohydrate requirement of the periphery, the adrenal glands supplement it in the emergency. Normally the secretion of the adrenals, adrenalin is a labile and only a temporarily acting activator of sympathetic catabolic processes (Isaac and Siegel) but in prolonged emergencies it assumes a prolonged function as a co-activator of the release of glycogen from the liver.

The result of the increased excretion of adrenalin which serves principally to send carbohydrates from the liver to the periphery is the clinically apparent increase in the blood pressure. In the metabolism of the liver the hyperadrenalinemia causes, on the one hand a renewed acceleration of the release of glycogen from the liver and on the other hand a slowing of the resynthesis of the lactic acid returning to the liver in increased amounts from the periphery. As a synthetic hormone of liver glycogen, adrenalin acts only in the very small concentrations in which it is normally present in the blood (Cori and Corti).

The result of the slowing of the resynthesis of lactic acid in the liver is the increase in lactic acid in the blood which has been recognized for years and which since the work of Loewer and Bokelmann, can no longer be regarded as exclusively the result of convulsions. The increase in the carbohydrate metabolism in the periphery on the one hand and the slowing of resynthesis in the liver on the other establish a vicious circle which with corresponding intensity of the participating reactions in the periphery may lead to a slowing of the oxidative metabolism and thereby to convulsions and in the central organ the liver the formation of the well known necrotic foci.

The theory of a direct toxic action on the organs chiefly affected by eclampsia, the liver and kidneys would classify eclampsia as a uniglandular disturbance which without doubt is incorrect. The conception of the condition as a "water poisoning" is also too limited as the disturbances demonstrated in the carbohydrate balance (Bokelmann Bock, Rother, and others) which still remain one of the principal problems of eclampsia, are not given sufficient consideration. (G)

Stroganov, V: Old and New Observations in the Treatment of Eclampsia (Alte und neue Beobachtungen in der Behandlung der Eklampsie) *Ginek.*, 1933 1/41 1

This article presents the opinions of the Russian postmaster of conservative treatment of eclampsia. Stroganov says, "It has not yet been definitely determined how eclampsia should be treated, but the predominance of conservative treatment is evident."

In the period from May 3, 1930 to August 23, 1931, 153 cases of eclampsia were treated with 7 deaths a mortality of 4.6 per cent. As compared with former years, the mortality showed a decline. Of 162 infants including 9 pairs of twins 35 (22 per cent) died. If the fatalities attributable to obstetrical interventions and complications are subtracted, the corrected infant mortality was 0.5 per cent. The obstetrical operations included 45 forceps applications, 2 versions, 1 cesarean section for a generally contracted pelvis, 3 perforations and cranioclasties, 9 extractions 1 Kristeller maneuver 1 drawing down of a foot and 2 manual separations of the placenta.

During the years from 1925 to 1931 788 cases of eclampsia were treated in Leningrad by the conservative method, with a gross maternal mortality of 3.1 per cent and a gross infant mortality of 20.6 per cent.

Stoeckel's contention that delivery should be effected within fifteen minutes after the first attack is theoretically not sufficiently grounded. The claim that cesarean section is the most sparing method of delivery for the eclamptic woman is refuted by recent statistics. According to the extensive material of Eden, the mortality of cesarean section in cases of eclampsia is 23.8 per cent whereas that of conservative methods ranges from 9.6 to 14.5 per cent. Kuestner and Winter give similar percentages. In cases in which labor must be terminated in the presence of an undilated cervix or because of eclampsia rupture of the membranes should be done instead of cesarean section if not otherwise, at least after previous dilatation of the cervix or with Hegar sounds. After from twelve to fifteen hours spontaneous labor will then occur and will be more rapid the more severe the toxemia. If the woman is unable to withstand the trauma of spontaneous labor she is unable to withstand the trauma of cesarean section.

In the cases reviewed except in those with offenses against asepsis and erroneous diagnoses which on hurried preparation of the patient for cesarean section are sources of danger all of the women who had had a total of from 1 to 3 attacks were delivered by cesarean section in accordance with the active procedure demanded by Stoeckel. However such cases constituted 40 per cent of 153 cases of eclampsia and 45 per cent of 300 additional cases.

The claim of Stoeckel that eclampsia leads to death more certainly the longer it lasts is also not absolutely correct. It is true only when the attacks continue. If the occurrence of attacks is prevented

by suitable therapeutic measures, the condition of the patient usually improves and it will be possible to avoid cesarean section, which is more dangerous than the eclampsia. Attention is called to the fact that in Stoekel's cases all of the infants survived although it is well known that in severe eclampsia the infants often die even before the beginning of labor. The conclusion may therefore be drawn that most of the women whom Stoekel delivered by cesarean section had only a mild form of eclampsia. The work of Waldstein in 1928 does not indicate the necessity for active treatment in eclampsia.

Recently luminal and a 25 per cent solution of magnesium sulphate (Schwars and Dorset, 1930) have been recommended as substitutes for chloral hydrate. It is still not possible to decide whether they can take the place of chloral hydrate. Their advantage lies in the fact that they may be injected subcutaneously or intramuscularly. As use of chloral hydrate as a diuretic is associated with the possibility that the drug may not be resorbed by the intestine, they may be tried in cases in which the usual morphine-chloral hydrate medication is not successful.

In cases of eclampsia even the slightest intervention such, for example as catheterization, should be done under chloroform anesthesia. A minimal amount of chloroform (from 2 to 6 c cm.) should be used only in exceptional cases should from 10 to 15 c cm. be given. Venesections, which are highly recommended, should not exceed 500 c cm. as hemorrhages are not rare during the third stage of labor in eclampsia. In eclampsia of pregnancy and cases of eclampsia in which labor lasts more than twenty-four hours after cessation of the attacks, from 0.5 to 1.5 gm. of chloral hydrate should be given in the course of the next few days 3 times daily according to the condition of the patient. Ether anesthesia is not advisable in eclampsia as it does not become sufficiently deep quickly enough, the vascular dilatation does not occur so energetically as in the use of chloroform the anesthesia ceases rapidly and ether induces a secretion in the bronchial tree which may lead to pneumonia. The subcutaneous infusion of from 300 to 500 c cm. of a 5 to 10 per cent solution of glucose is more harmful than helpful. The subcutaneous injection of oxygen is valueless. Anuria is not an indication for cesarean section as it very often ceases under conservative treatment. Spinal puncture is an unessential adjuvant.

VON KROON (G)

LABOR AND ITS COMPLICATIONS

Laffont A., and Fulcoms, H.: *Placenta Prævia at the Alger Maternity Hospital (La placenta præ via à la Maternité d'Alger)*. *Rev franç. de gyn. et de obst.* 1934 vol. 189.

The authors review 301 cases of placenta prævia occurring among 11,921 obstetrical cases observed during the period from 1905 to 1933. In 381 purely obstetrical procedures were carried out. Simple rup-

ture of the membranes was done in 110; rupture of the membranes with dilatation or version but without immediate extraction in 95; version by internal maneuvers with complete dilatation in 73; and the Delmas procedure in 3. There were 18 deaths. In 5 of the fatal cases death was due to hemorrhage in 7 to uterine rupture in 4, to infection; in 1 to embolism and in 1 to shock. Most of the fatal hemorrhages were caused by forced dilatation of the cervix. This procedure frequently leads to laceration of the cervix or to lesions of the isthmus or broad ligaments, regions often weakened in multipare by endometritis. The deaths due to infection were easily explained by the premature rupture of the membranes with repeated manual examinations before the patient's admission to the hospital. In the cases of fatal shock, anemia, acidosis, hepatic insufficiency and the duration of the operation rendered the patient unable to stand anesthesia. It is possible that in some of these cases the patient's life might have been saved by operation, but at the time that most of them occurred the surgical procedures of Krounig and Sellheim were not well known in France. In recent years new surgical procedures have taken the place of the older obstetrical methods in placenta prævia.

Cesarean section was first tried in placenta prævia at the Maternity Hospital of Alger in 1924. Other procedures followed with the subsequent evolution to hysterectomy and finally of suprasymphysal cesarean section. Since 1924, broad incision of the cervix has been done by the authors in 1 case, hysterectomy in 1 case, high cesarean section in 6 cases, and suprasymphysal cesarean section in 13 cases. There were 2 deaths. These cases are reported in detail.

The results of suprasymphysal section have been better than those obtained by the classical cesarean operation. Of the patients operated upon by high cesarean section, 3 died from acute infection, while of the 12 patients subjected to suprasymphysal cesarean section, all recovered.

High cesarean section has its advocates for cases in which the membranes are intact, only a single hemorrhage has occurred, few manual examinations have been made, and the cervix is devoid of lesions. Segmental incision is recommended. This procedure has been found of value for patients who have lost a large amount of blood and have a high temperature. One or 2 gauze tampons are left in contact with the sutured uterine wound for two or three days. The drains are placed in the subserous spaces formed by the commissures of a peritoneal fold incompletely sutured, or between the parietal and visceral leaves adhering to each other or by a longitudinal incision, in the peritoneum itself incompletely sutured. There is less risk of injury to the vessels in this procedure than in a transverse incision.

The authors believe that by this application of gauze drains to the uterine suture they have avoided a hysterectomy in several cases in which that operation seemed indicated. They sacrificed the uterus in

only 1 case, a case in which there had been much manipulation, the cervix was edematous, the membranes were ruptured, and there was abundant hemorrhage. The patient was a multipara with 3 living children. She made a good recovery, but there was no reason to assume that she might not have done just as well after a suprasymphysal cesarean section. The authors believe that hysterectomy is indicated in cases with severe hemorrhages to prevent further loss of blood that might prove fatal, and in cases with severe infection as a last resort: i.e. when the time for a saving cesarean section has passed or obstetrical treatment has failed. Porges' operation was not performed and broad incision of the cervix was done in only 1 case. The vaginal cesarean section was not attempted.

Pre-operative transfusion is highly recommended. In the cases reviewed, intervention was made under spinal anesthesia if the arterial tension was not too low. Complications are much more common after obstetrical procedures than after surgical procedures.

In conclusion the authors state that they use obstetrical procedures when the placental insertion is far from the internal os and especially when, in the cases of primiparae, the normal progress of dilatation after rupture of the membranes permits extraction of the fetus without causing a lesion of the cervix.

In cases presenting mechanical difficulties such as malpresentation, a large fetus, or a narrow pelvis, and cases such as those of fibromatous uterus or cicatricial cervix, in which some complication during labor is superadded to a hemorrhage which in itself might not be sufficient to indicate operation, immediate operation is performed as soon as the inferior segment is well formed.

When the rupture of the membranes is insufficient to prevent hemorrhage, the presentation remains high, and dilatation does not progress, no attempt at artificial dilatation is made but suprasymphysal cesarean section is done under spinal anesthesia if the blood pressure permits. When infection is suspected drainage is established.

A similar intervention is done when the placenta previa occurs as labor begins.

Hysterectomy is performed in cases in which hemostasis is urgent and imperative or there is grave danger of infection. The uterus should be removed as quickly as possible and without preceding cesarean section.

In spite of the remarks of Trautck in this regard, the authors are of the opinion that pre-operative transfusion was an important factor in the successful results obtained in their cases.

EDITH SCHANZLE MOORE.

Siedentopf: The Frequency and Etiology of Occiput Posterior Presentation. (Häufigkeit und Ätiologie der occipito-posterioren Lagen) *Arch f Gynaek.* 1933 Cvi 225

A comparison of the statistics in the German and American literature with regard to the frequency of occiput posterior presentations (including so-

called vertex presentations and frontal presentations) shows a surprising difference. Whereas, according to American statistics, the frequency of these presentations ranges from 14 to 30 per cent, according to the German literature it ranges only from 1 to 15 per cent. However there are definite differences of definition as American obstetricians designate as occiput-posterior presentations all those in which the occiput is found behind the transverse diameter of the pelvis at any time during labor whereas German obstetricians do not include among cases of occiput posterior presentation those in which the occiput posterior position occurs only temporarily. Nevertheless it is evident from the literature that the difference in definition is not sufficient alone to account for the great difference in the statistics. This is evident also from studies carried out by the author in the University Gynecological Clinics of Chicago and Leipzig.

Of 900 obstetrical cases reviewed by the author in Chicago an occiput posterior position was found in 74 (8.4 per cent) and according to the statistics of the Chicago Clinic such positions occurred in 12.4 per cent of 35,113 deliveries. On the other hand of 36,457 deliveries in Leipzig, an occiput posterior position occurred in only 373 (1.4 per cent).

The explanation of this peculiar difference is difficult. Racial differences do not seem to be a factor. Most probable seems to be a primary influence of the shape of the pelvis as determined by the mode of life and development. The influence of the shape of the pelvis on the occurrence of the occiput posterior presentation is discussed by the author on the basis of drawings.

In examinations of the pelvis of 68 women in Leipzig who had had an occiput posterior presentation, the most important observation was that the pubic arch was on the average considerably higher and narrower than in women who had had normal deliveries. It appears that the transversely narrowed and the funnel-shaped pelvis are those most favoring occiput-posterior presentations. According to the literature and the author's experience pelvis of these types are considerably more frequent in America than in Germany. Siedentopf suggests that the greater frequency of pelvis of these types, which resemble the pelvis of the male and of the child, is related to the mode of life, especially the intensive athletic life led by women in America. (G)

O'Connor, C. T.: Cesarean Section. A Review of 436 Cases. *New England J Med.* 1934, Ccx, 948.

In 436 cases of cesarean section reviewed the corrected mortality was 3.9 per cent. In 296 classical sections it was 2.1 per cent, and in 133 laparotomies, 5.3 per cent. In the cases in which the low cervical operation was done the morbidity rate was slightly lower. In cases of eclampsia treated by cesarean section the maternal mortality was 20 per cent and the fetal mortality 25 per cent. The gross fetal mortality in the series was 9.5 per cent.

The author concludes from this study that, especially if there have been vaginal examinations or attempts at delivery women who have had a long labor with membranes ruptured for a long time are not good risks for either type of operation.

ALBERT W. HOLMAN, M.D.

Trottenero, M.: Postmortem Cesarean Section (Sul taglio cesario postmortem). *Chir. ital.* 1934, LVII, 305.

The author reports a cesarean section performed eighteen minutes after death from a skull fracture caused by a blow on the head. The fetus was mature and the fetal heart tones were audible. The operation was performed without preliminary preparation. A living child was delivered.

From a review of the literature Trottenero concludes that the fetus *in utero* cannot survive the death of the mother by more than thirty minutes and that therefore cesarean section should not be delayed for family consent to the operation or for asphyxia.

He concurs with others that postmortem cesarean section should not be done unless the child is viable and alive. Smith believes that it is useless before the twenty-ninth week of pregnancy, whereas Stone is of the opinion that it is useless before the thirtieth week. As a rule it is contra-indicated before the seventh month of pregnancy.

GEORGE C. FIOOLA, M.D.

PUERPERIUM AND ITS COMPLICATIONS

Selye, H., Collip, J. B., and Thomson, D. L.: Nervous and Hormonal Factors in Lactation. *Endocrinology* 1934, XXIII, 257.

The authors report experiments carried out on rats, mice and guinea pigs to determine what stimuli induce the anterior lobe of the hypophysis to secrete prolactin. Hypophysectomy terminated established lactation in the rats and mice. It did not disturb pregnancy when it was done in the latter half of gestation on the rats and mice or on a guinea pig in the fourteenth day. However, the rats and mice lactated for only a few hours after parturition when hypophysectomy was performed during pregnancy. Although the hypophysis is essential for lactation, these studies indicate that the pregnant uterus or its contents may play the part of the hypophysis in supplying functional stimuli to the mammary glands.

Lactation occurred in a series of rats after cesarean section performed late in pregnancy but not in another series in which hypophysectomy was done prior to a third series in which the uterus was distended with paraffin after removal of the fetuses. Distention of the uteri of virgin rats with paraffin caused prolonged di-oestrus without the mammary development typical of pseudopregnancy. Therefore mechanical distention of the uterus affected hypophyseal function.

When all the galactophores were tied, suckling continued in lactating rats and rapid involution of

the mammary glands did not occur. The nervous stimulus of suckling at the nipples of certain glands maintained active secretion in neighboring glands not suckled. The act of suckling also maintained lactation di-oestrus in rats in which escape of milk was prevented by ligation of all galactophores. The authors conclude that the act of suckling affects the anterior lobe of the hypophysis reflexly so that the latter continuously produces prolactin and further ovulation and the phenomena of oestrus are inhibited.

A. F. LANE, M.D.

Turunen, A. O. L.: Mediastinal and Subcutaneous Emphysema of Parturient Women (Emphysema mediastinale et subcutaneum parturientium). *Acta Obst. et Gynec. Scand.* 1934, XIV, 76.

The author reports the cases of two young healthy primiparae who developed a localized cutaneous emphysema of the upper part of the body chiefly on the right side following normal labor associated with little difficulty. In one case a roentgen examination of the chest was made. This showed the presence of air also in the mediastinum. Clinical examination revealed absence of absolute cardiac dullness for several days. These findings indicate that emphysema of the skin following delivery is accompanied by a mediastinal emphysema which is probably due to a subpleural tear of the lung. It is to be assumed that the air enters the mediastinum from the tear in the lung and enters the skin from the mediastinum.

As this complication is very rare and no more than ordinary efforts during labor are required to produce it, we must assume that its occurrence is favored by congenital anomalies of the respiratory tract or unusual fragility of the pulmonary tissue. It is possible that mediastinal emphysema is associated with labor more frequently than is believed. However, if self-demonstrates to such a degree that cutaneous emphysema occurs.

Bohler, E., and Reiles, M.: Discontinuance of Uterovaginal Tamponade in Favor of Uterine Exploration Combined with the Intravenous Injection of Hypophysin (Suppression du tamponnement utéro-vaginal au profit de la rétroversion utérine combinée à l'injection intraveineuse d'hypophysine). *Gynec. et Obst.* 1934, XXV, 393.

Prior to July 13, 1931, it was the authors' practice to perform uterine tamponade after every digital exploration of the uterus for retained membranes, after every manual removal of the placenta, and after uterine hemorrhage during and following delivery. In the course of 13,793 deliveries in the period from 1922 to July 15, 1931, tamponade was done 220 times with 5 deaths and a high morbidity. Tamponade following manual removal of the placenta had a morbidity of 50 per cent, and tamponade following digital exploration of the uterus a morbidity of 10 per cent.

Since 1931 the authors have abandoned uterine tamponade, substituting for it the intravenous administration of extract of the posterior lobe of

the hypophysis (hypophysis). In 4,000 deliveries, 400 of which were followed by digital exploration of the uterus for retained secundines and in 20 of which manual removal of the placenta was done, there were no deaths. One death from septicemia followed manual removal of the placenta in a frankly septic case.

The authors believe that in the treatment of uterine atony tamponade is dangerous as it is technically difficult and it permits continuance of the hemorrhage behind as well as through, the packing so that serious loss of blood may be unrecognized. Uterine damage from perforation or from extension of tears of the cervix and lower segment of the uterus are not rare. Moreover the morbidity and mortality after the procedure are high.

After exploration of the uterus and manual removal of the placenta the intravenous administration of hypophysis acts promptly to produce uterine contractions which arrest or prevent hemorrhage. Since the authors have abandoned tamponade they have never seen an instance of severe hemorrhage necessitating the intravenous administration of fluid or blood transfusion.

HAROLD C. MACK, M.D.

Hustin A.: Variations in Temperature Observed During the Course of a Case of Suppurative Thrombophlebitis of Puerperal Origin (Variations de température observées au cours d'un cas de thrombophlébite suppurée d'origine puerpérale). *Gynec et Obst* 1934 XXX, 289.

The author studied simultaneously the fluctuations in the cutaneous and rectal temperature in a fatal case of suppurative thrombophlebitis of puerperal origin. The temperature readings at ten minute intervals during the eighteen days prior to death were obtained by means of special mercury thermometers attached to the palm of the hand and inserted in the rectum which recorded the changes in the mercury levels automatically.

Under normal conditions in man the peripheral and central temperature curves usually parallel each other closely, differing only from five tenths to six tenths of a degree. As vasomotor effects resulting in a change of caliber of the cutaneous vessels bring about changes in the skin temperature, the usual parallelism may be changed in disease or emotional states. The author studied these variations to determine what factors may bring about a change in the normal temperature relationship between the skin and the interior of the body.

The patient whose case is cited had a succession of febrile attacks, each of which showed the same thermal characteristics. At the onset of every attack the rectal and skin curves which previously had remained closely parallel suddenly diverged the rectal temperature rising and the skin temperature falling. After reaching its peak the rectal temperature subsided slowly and progressively. At the moment that the rectal temperature began to descend the skin temperature darted upward, attaining a

level close to that of the central temperature curve. It then again subsided until it resumed the normal parallel relationship.

As the peripheral temperature depends upon dilatation or constriction of the skin vessels, the skin temperature accurately reflected the variations in vessel caliber and demonstrated the vasoconstriction which took place at the onset of the attacks and was followed immediately by vasodilatation. These periods of contraction and dilatation are sudden and complete. The beginning and the end of the rise in the central temperature correspond exactly with the beginning and the end of the drop in the skin temperature or, in other words, with the beginning and the end of cutaneous vasoconstriction.

As the sensations of changes in the peripheral temperature are perceived more acutely than those of changes in the central temperature, the thermal curve of the hand permits more accurate determination of the beginning and end of febrile attacks. Intense attacks are accompanied by chills which continue for a short time after the onset of vasoconstriction and cease while the vessels are still constricted.

In the reported case of thrombophlebitis the febrile attacks and the rises which followed the intravenous administration of gonococcus vaccine were followed by identical temperature variations. The author regards this as further evidence that the febrile attacks of thrombophlebitis are provoked by septic emboli. He believes that when positive blood cultures are obtained infrequently in this condition the blood is not taken at the proper time. The blood should be withdrawn not at the moment of the chill, but fifty minutes or more before the chill. Despite the large number of febrile attacks in the author's case which were due presumably to septic emboli or the dissemination of bacteria, only three metastatic abscesses were found at autopsy. Hustin was unable to note any type of periodicity in the febrile attacks. However, the attacks were most frequent during the day and during the period corresponding to invasion of the primary iliac vein by thrombi. From these observations Hustin concludes that among the factors producing febrile attacks are the movements of the patient and the arrival of a fresh thrombus at the level of a vein of larger caliber.

During certain periods the central temperature presented capricious oscillations and during others it remained at a high and constant level. In the former the febrile attacks were fewer and the central temperature was able to descend to the level which it would have occupied under normal conditions. This fact seems to indicate that in cases of thrombophlebitis the thermal centers are disturbed only at the time of embolism. In contrast to other acute infectious diseases in which they are disturbed constantly Hustin ascribes constant elevation of the temperature to the occurrence of many attacks of septic embolism in rapid succession.

HAROLD C. MACK, M.D.

secondary hemorrhages, and infection. The indications for operation in cases of open renal injuries are similar to those in cases of subcutaneous injuries. Less serious cases of subcutaneous rupture and open injuries should be treated conservatively. Under certain circumstances conservative operative procedures, such as renal suture and resection of the renal pole, appear to be indicated. After subcutaneous rupture, adhesions of the kidney to surrounding tissues or cicatricial strictures of the urethra may result in a serious secondary renal condition such as hydronephrosis or renal suppuration.

Of the patients whose cases are reviewed by the author 30 recovered, 8 are still in the hospital, and 3 died. Of the 6 who were operated upon, 1 died of septic infection of a solitary kidney which was subjected to nephrostomy. Of the 18 who were given conservative treatment, 1 died of severe nephritis.

G. AURON (Z)

Pulgritt Gorro, A.: Cystoscopy in Renal Tuberculosis (La citoscopia en la tuberculosis renal). *Rev med Barcelona* 934, 74, 99.

Before a cystoscopic examination can be made in the majority of cases of renal tuberculosis the capacity of the bladder must be increased to from 80 to 100 c cm. This can be accomplished by giving instillations of 30 c cm. of 20 per cent gormenolated oil once or twice daily for from twelve to fifteen days and at the same time administering from 5 to 10 cgm of methylene blue by mouth before meals. It is advisable to induce anesthesia of the urethra and bladder for the examination. The author recommends instillations of cocaine or spinal analgesia.

The initial lesions are dark red areas resembling areas of ecchymosis and due to a marked increase in the vascular network of the bladder. In the center of these the typical tubercle is frequently found. The tubercles are the size of millet seeds and lie under the mucosa. Their yellowish color can be seen through the mucosa. They may occur singly or in groups, and are usually located near the ureteral meatus.

The later lesions are "exulcerations" which are characterized by small crater-like ulcerations with rounded, regular, slightly elevated borders, the result of necrosis of the mucosa overlying the tubercle. The center of the ulcer is yellowish.

The ulcerations are of two types—plane ulcerations and excavated ulcerations. The plane ulceration is similar to, but larger than, the exulceration. It has a yellowish base and shows a marked tendency to bleed. Its borders are raised and regular but not separated from the base. It presents two basal zones—a yellowish zone in the center and a pinkish zone outside which is continuous with the mucosa. The excavated ulcer which is more common than the plane ulcer has a necrotic and irregular appearance. It has straight borders and a gray or pink base, and is often covered by a false membrane.

Another finding in renal tuberculosis is vesicular edema. This is rare and never occurs alone. Its

appearance is that of a bunch of grapes. It is usually located in the fundus or the upper wall of the bladder.

Especially in long-standing cases, the tuberculous lesions are frequently accompanied by non-specific lesions due to secondary infection of the bladder. The most common locations of the tuberculous lesions are the vicinity of the ureteral meati and the vertex of the bladder—a fact which Marion considers pathognomonic.

Regression changes are noted most frequently in the ulcerations and the edema. In the ulcers the edges become invaginated and adherent to the base giving the impression that the epithelium is covering the base of the ulcer. When the patient is taking methylene blue, the false membranes which cover some of the ulcers take on a bluish tint at this stage. When the ulcers heal rapidly they leave no scar. The vesicular edema disappears slowly and leaves no marks in the mucosa.

The most frequent findings are thickening of the edges of the ureteral meatus and the presence of milium tubercles. In early cases submucosal edema or petechiae may be noted in the vicinity and in more advanced cases the borders of the meatus may become serrated. The lips of the meatus become rigid early and their rigidity favors reflux of the vesical urine. The reflux may be noted also on the unaffected side and seems to be due to sclerosis of the interureteral muscle.

In closed cases of renal tuberculosis in which the kidney has ceased to function, the ureteral opening cannot be found as it lies in the bottom of a cavity in the bladder which is formed by the pulling of the sclerosed and shortened ureter. As a rule these cases do not show any bladder lesions as bacilli do not reach the bladder.

If an injection of urinary dye is given it will be noted that the urine is caused to run out of the ureter by overflow rather than by peristaltic waves of the ureter.

W. H. MARTINEZ, M.D.

Gutierrez, R.: Nephrostomy as a Preliminary Drainage in Preparation for Secondary Nephrectomy. *J Urol* 1934 XXXI, 305.

Nephrostomy is indicated, (1) to allow a diseased kidney to regain normal function, (2) as preparation for a secondary nephrectomy when the other kidney is capable of undergoing compensatory hypertrophy, and (3) when a primary nephrectomy has been planned but is prevented by conditions found at operation or by serious general condition of the patient. It has its widest application in the relief of urinary symptoms with retention and infection.

The author describes three types of nephrostomy: 1. Nephrostomy without incision of the kidney, a blunt instrument being inserted through a pyelotomy incision and through the cortex at the most favorable spot.

2. Nephrostomy after a nephrotomy, the latter incision being made with a knife or a blunt instrument.

3. Nephrostomy planned to drain a large functionless pyonephrotic kidney.

Secondary nephrectomy is performed as soon as the patient's condition permits. The indications for secondary nephrectomy must be determined in three types of cases:

1. Cases in which a nephrostomy has been performed as a definite step in the two-stage nephrectomy.

2. Cases in which a previous operation has left an incurable suppurating lumbar fistula.

3. Cases in which there are subsequent symptoms or there has been a recurrence of symptoms with a pyonephrotic infection aggravating the condition.

The secondary nephrectomy should not be performed until the condition of the other kidney has been accurately determined.

Secondary nephrectomy is technically difficult. The procedure is of five types: (1) the typical extracapsular lumbar nephrectomy, (2) subcapsular nephrectomy, (3) removal *en bloc* of the kidney and fatty capsule, (4) nephrectomy by morcellation, and (5) transperitoneal nephrectomy.

The author reports two cases in which nephrostomy was done for preliminary drainage in preparation for a secondary nephrectomy.

AMORR W. McNALLY, M.D.

Fernandez-Senante V. Free Inter Ureteral Muscle; Its Pathogenesis (*Muscle Interureterique libre, sa pathogenie*). *Arch. d. med. & de chir. d. organes genito-urinaires*, 1933, vii, 593.

In the cystoscopic examination of a young woman suffering from tuberculosis of the kidney, the author was able to make out two free bridges of tissue extending from close to the ureteral orifices toward the midline where they were joined together and attached to the bladder wall. At autopsy large sounds could be passed under each bridge of muscle tissue.

The author reviews the literature on such anomalies and shows them by numerous pictures.

MASS W. POOLZ, M.D.

Lazarus, J. A.: Primary Tumors of the Ureter with Special Reference to the Malignant Tumors. *Ann. Surg.* 1934, xli, 769.

Lazarus reports in detail three cases of primary malignant tumor of the ureter and gives a brief summary of each of the sixty-five cases previously reported in the literature. Of the total number of tumors 42 per cent were of the non-papillary type. Malignant ureteral tumors are found most frequently in the lower part of the ureter. In 67 per cent of the cases reviewed the tumor was associated with hydronephrosis, and in 51 per cent with hydro-ureter. The growth is invasive. In 48 per cent of the cases reviewed it formed metastases in the regional lymph nodes in 18 per cent in the lungs, and in 22 per cent in the liver. Although pain, hematuria, and enlargement of the kidney are the characteristic symptoms, hematuria alone was the outstanding

symptom in 75 per cent of the cases. The only pathognomonic sign of tumor of the ureter is a definitely established filling defect in the ureterogram, but this was reported in only 8.7 per cent of the cases. The presence of a tumor at the ureteral orifice may suggest the diagnosis. It was reported in 29 per cent of the cases reviewed.

Because of the difficulty of palpating a tumor within the ureter at the time of operation, the author believes that when operation is done for exploration of the upper urological tract for hematuria, especially when tumor of the ureter is not suspected it is better to perform a complete ureterectomy with nephrectomy if the kidney itself fails to account for the bleeding.

FRANK M. COCHRAN, M.D.

Cirillo N. and Dettori L.: Bilateral Surgical Excision of the Ureteral Orifices (*Sulla escissione cruenta bilaterale degli sbocchi ureterali*). *Polid. Rome*, 1934, xlii, sez. chir. 248.

The authors review the literature on pathological changes about the ureteral orifice and their effects on the kidney and the rest of the urinary tract. They state that the anatomy, physiology, and physiopathology of the papilla of the ureter and the so-called valve of the ureter have not been definitely settled. They discuss the problems of hydronephrosis and the vesicorectal reflex.

In a series of experiments on dogs the authors excised varied amounts of the ureteral orifices with the scissors and subjected the tissue removed to histological study to determine the exact nature of the layers excised. The specimens ranged from mucosa alone to almost the entire wall. After a varying period of time the dogs were sacrificed and the tissues studied. No matter how much of the wall was removed, healing occurred promptly and regularly. When the muscularis was not involved in the excision the healing was without effect on the subsequent function of the ureter but when the muscularis was excised the regenerative processes resulted in a cicatricial contraction of the ureter of varying grades such that, after a period of time, a typical hydronephrosis developed.

A. LOUIS ROSE, M.D.

Higgins, C. C.: Aseptic Uretero-Intestinal Anastomosis. *J. Urol.*, 1934, xlii, 797.

The author reports on eight cases of aseptic uretero-intestinal anastomosis by his new modification of Coffey's method of transplanting the ureters into the lower bowel.

The ureter was placed in the trough of the bowel produced by an incision in the serous and muscular layers to the mucous membrane without interrupting its continuity. The new channel between the ureter and bowel was produced by a mattress suture between the two similar to that employed by Coffey. After the new channel had been formed and had been demonstrated to be functioning, the bladder was removed and the ureters were divided and ligated below the point where the new channel was

formed, that is, at the point where they emerged from the trough in the bowel. In experimental animals the lower ureter and bladder were removed by the intraperitoneal route, but in clinical cases their removal is accomplished best extraperitoneally.

The authors' experimental findings have been checked up by postoperative observations, cystoscopic studies, intravenous urography, and necropsy studies. In the clinical cases there was complete absence of peritonitis and acute renal infection.

NAGORIK MINIZIN, M.D.

BLADDER, URETHRA, AND PENIS

Abramjan, A., Romberg, L. and Majanc, A.: The Early Diagnosis, Treatment, and Prophylaxis of Tumors of the Bladder (*Die fruehe Diagnose, Therapie und Prophylaxe der Harnblasengeschwulste*). *Sowjet. Chir.* 1933, 1: 547.

During 1931 and 1932 51 patients with tumors of the bladder were treated at the Urological Clinic of the Moscow Institute for Medical Postgraduate Study. These constituted 5.1 per cent of all patients. Of the total number of 113 patients coming to the Clinic because of tumor of the bladder 70 per cent were men and many of them were in vigorous health. Fifty-five and eight-tenths of the tumors were malignant. In only 63 cases were they operable. In addition to work in aniline factories, the factors of importance in the etiology of the tumors included decomposition products of protein and amino acids, bilharziasis, and nematodes. The patients came for observation late because the disease runs an asymptomatic course, many physicians know little about these tumors, and there are few special urological clinics equipped with a diagnostic instrumentarium.

The most important symptom is hematuria. This occurred in 94 per cent of the cases reviewed. In some cases it occurs rarely and in others it does not appear until late (from one to three months before death). Often both the patient and the physician attach no great importance to it. The other signs of the disease vary considerably. Disturbances of urination occur only when the tumor penetrates deeply into the bladder wall. Pain is produced by penetration of the tumor into the deep paravascular cellular tissue. Metastases and cachexia are rarely observed. Therefore hematuria remains as the only sign and when it occurs a cystoscopic examination should be made as soon as possible.

In accordance with the suggestion of Gottlieb 3 types of bladder tumors are differentiated, the infiltrating and the non-infiltrating. The signs of the former are an immovable tumor, spreading of the tumor to neighboring organs, frequent hematuria, and pain. For the treatment of benign tumors, electrocoagulation is recommended as the only rational procedure. This may be done also as ambulatory treatment. Suprapubic section is justified only in cases of very extensive tumor or severe hemorrhage. Of 49 papillomata treated at the

Urological Clinic of the Moscow Institute, 48 were coagulated. In 3 cases chemocoagulation was done in addition. In 5 cases the electrocoagulation was done through the open bladder. Of 21 patients who were operated upon and followed up, 6 were found to be free from recurrence after from four to six months and 3 after one and two years respectively. In 1 patient a new papilloma developed a year after the operation. Chemocoagulation with trichloroacetic acid is also recommended.

In cases of malignant tumor the choice of the method of treatment depends upon the location of the neoplasm. In cases of tumor of the anterior and lateral walls of the bladder resection may be done, but in cases of tumor at the fundus and near the ureteral orifice total extirpation of the bladder is necessary. The ureters are best implanted into the skin. Electrocoagulation must not be applied to malignant tumors. Up to the present time no good results have been observed from irradiation with the roentgen rays, radium, or mesothorium. Irradiation should be used only in inoperable cases. For cases in which radical operation is impossible, conservative coagulation is recommended for the relief of pain.

Some forms of cancer of the bladder (especially aniline cancers) run a very benign course. Therefore conservative therapy may be recommended for advanced cases. However an attempt at early diagnosis should always be made. For this purpose there is need for the establishment in cities and rural districts of urological institutes with a sufficient number of cystoscopes and with physicians who are well acquainted with the technique of cystoscopic examination. Special attention should be directed to the aniline factories for elimination of the injurious factors which produce cancer and for early diagnosis of already existing disease.

M. SILVERBERG (2).

McCrea, E. D. A., and MacDonald, A. D.: Prostatic Sympathectomy and the Urinary Bladder. *Brit. J. Urol.* 1934, 4: 179.

The authors believe that the indications for prostatic sympathectomy and the results to be expected from this operation are not yet defined. Experimental physiological studies have shown that the hypogastric nerves are not essential for satisfactory function of the bladder and that under varying circumstances their excitation may produce either relaxation or contraction of the vesicles. It appears that they transmit sensory impulses, particularly the sense of distention and that they possess vasoconstrictor fibers. It is not possible to state that any particular area of the bladder always responds in the same manner although a number of observers have noted contraction limited to the trigone region. Neither is it possible to attribute a definite function to these nerves in relation to sphincteric action.

In the case of man, some light has been shed on the problem by observations after prostatic sym-

pathectomy. There is as yet no proof that the hypogastric nerves act either purely as excitators or purely as inhibitors of the bladder as a whole. Three investigators have obtained excitator effects localized to the trigonal region. It is claimed that pain can be partly though not completely controlled and that rebellious inflammations are sometimes cured perhaps because of vasodilatation. Improvement sometimes marked, has been noted in attempts to relieve the retention of cord bladder but the careful treatment given these special cases and the psychological effects of the operation must be taken into consideration. Evidence as to the effects of the operation upon sexual function especially in males, is sparse. **ANDREW McNALLY, M.D.**

Lowaley, O. S. and Kirwin T. J. A Clinical and Pathological Study of Congenital Obstruction of the Urethra. A Report of Four Cases. *J. Urol.* 1934 xxi, 497

Congenital obstructions of the urethra in male children were first described one hundred years ago by Vespucci in a report of autopsy findings. The first complete study of the anomaly was made by Tolmachev in 1870 (autopsy examination). The first clinical case was reported in 1915. The authors add 4 cases to the 130 they have been able to find in the literature.

The etiology of the anomalous folds causing the obstruction is unknown.

Valve-like obstructions of the prostatic urethra are of the following 3 types: (1) those in which membranous folds begin at the verumontanum and extend to the bulbomembranous region, (2) those in which membranous folds start at the posterior part of the verumontanum and extend to the internal sphincter and (3) those without relation to the verumontanum, which usually occupy the entire circumference of the prostatic urethra and present a central opening of the urethra. The urinary stream from the bladder obstructs the urethral passage mechanically by ballooning out the membrane. The secondary effects of mechanical blocking of the prostatic urethra are marked vesical dilatation trabeculation and diverticulum formation. Gaping of the ureteral orifices leads to dilatation of the ureters and hydronephrosis with secondary infection usually bilateral.

In infants and young male children the following symptoms should suggest the anomaly: a small stream dribbling the escape of urine by drops, and overflow incontinence resembling enuresis.

The diagnosis is made by intravenous excretion urography, cystography, and cystoscopy with the improved children's cystoscope. In advanced cases the cystogram shows a characteristic funnel-shaped shadow when the opaque fluid fills the bladder and flows into the prostatic urethra up to the point of obstruction. In some of these cases cystoscopic examination shows a concavity of the membranous diaphragm in the posterior urethra always toward the bladder.

The cases require individual care. Preliminary drainage and urethral dilatation are often necessary before the valve-like obstructions are cut or destroyed with the fulgurating current.

Of the authors' four cases, the condition was found at autopsy in one. The article contains drawings of the valve obstructions in the prostatic urethra.

BLAUGHER MELTZER, M.D.

GENITAL ORGANS

Cole, F. H. and Martin L. R. Lymphosarcoma of the Prostate. *J. Urol.*, 1934 xxi, 803

Primary lymphosarcoma of the prostate is quite rare. The authors have been able to find reports of only four authentic cases. They state that pathologists do not yet agree as to whether the histology is that of true sarcoma. Most of them tend to favor the theory that the tumor is a highly anaplastic carcinoma. The case reported by the authors seems to support this theory as the tumor was not favorably affected by deep X-ray therapy. Ewing and Randall doubt the occurrence of true lymphosarcoma of the prostate because recent histological descriptions of the normal gland fail to show the presence of lymphatic elements from which a lymphosarcoma could arise. Ferguson and Stewart call attention to lymphatic infiltration in the prostate in cases of lymphosarcoma with a history of gonorrheal infection. In all case reports the primary tumor is described as smooth, rounded and slightly lobulated but not distinctly lobular. The neoplasm tends to invade the seminal vesicles without producing the characteristic stony hardness of carcinoma. It does not form skeletal metastases. Involvement of the abdominal viscera and retro-peritoneal lymph glands is the rule.

The authors' case was that of a man fifty-six years of age who complained of the typical symptoms of prostatism. When the patient was first seen on December 12, 1931, the prostate felt large but was of normal consistency. On December 21, 1931, tissue that was believed to be a median bar was removed with the electrotome. About a month later suprapubic prostatectomy was done because of recurrence of the symptoms. The prostate was indurated, rounded and of cartilaginous firmness. It was enucleated very easily. The pathologist's report was "Very malignant round-cell histoid tumor not carcinoma and probably not primary in the prostate. Complete X-ray studies revealed no evidence of metastases. About four months later urinary symptoms recurred and there was gross hematuria. On rectal examination a markedly nodular prostatic enlargement was felt. X-ray studies showed no metastases. Deep X-ray therapy was given. Three months later the patient returned to the hospital complaining of nausea, vomiting, urinary symptoms, pain deep in the pelvis, and an indurated mass just above the pubis. A cystogram showed a neoplastic filling defect of the bladder. Cystotomy was done. Difficulty was experienced

In opening the bladder because of a tumor mass involving the right half, evidently an extension of the prostatic growth. Death occurred two weeks after the operation.

The findings at autopsy were essentially negative except for infiltration of the pancreas with lymphocytes suggesting metastasis and infiltration of the bladder wall with lymphosarcoma.

Sections of the primary tumor were submitted to the pathological laboratories of the University of Michigan and Johns Hopkins. The report was:

Lymphosarcoma infiltrating the prostate and its capsule. The prostate is invaded by a round-cell tumor of the lymphocytic series, very malignant."

MAURICE MILLER, M.D.

Decker, F.: The Estimation of Renal Function Before Prostatectomy (L'évaluation de la fonction rénale avant la prostatectomie). *Rev. méd. de la Suisse Rom.* 1934, p. 323.

Decker discusses the surgical methods employed in dealing with prostatic hypertrophy in various clinics and reviews the history of methods of estimating renal function with regard to operative risk.

In thirty-eight hospital cases cited a definite routine was followed for determining renal function by Ambard's coefficient after titration of the blood urea with sodium hypobromite and mercuric nitrate, and by the Rowntree and Gergarty phenolsulphophthalein test. One of the patients died of late pulmonary complications, but none showed evidence of renal insufficiency.

The chief dangers of prostatectomy are (1) hemorrhage, (2) infection (succeeding pyelonephritis) and (3) renal insufficiency. The use of methylene blue for the determination of renal function has been largely abandoned. Indigocarmine and phenolsulphophthalein are both employed extensively.

The author reviews the methods of pre-operative investigation used in seven important European clinics and gives the operative mortality reported from these clinics.

MARSH W. POOLE, M.D.

Xavier, A.: Surgical Treatment of Scrotal Varicocele on the Left Side by the Method of Ivanisevich (O tratamento cirúrgico da varicocele escrotal esquerda pelo processo de Ivanisevich). *Seminário med.* 1934, 211, 377.

The author discusses the work of Ivanisevich who showed that, contrary to the classical conception, the veins of the left spermatic cord are all tributaries of the spermatic vein except in about 10 per cent of the cases in which there is a group of veins accompanying the vas deferens which empties into the hypogastric vein. The article includes diagrammatic sketches of the arrangement of the veins. On the basis of his findings Ivanisevich devised an operation for varicocele on the left side of the scrotum in which the incision is made in the left iliac fossa from the antero-superior spine of the ilium to the external border of the rectus and the spermatic vein is exposed outside the peritoneum and sectioned between two ligatures

In Bogros' space. As the varicocele is caused by reflux of blood in the spermatic vein from insufficiency of the valves, it is cured by this method. The steps of the operation are shown by illustrations.

In the operations previously performed the objective was the same, but as the approach was made by the inguinal or scrotal route, branches of the spermatic vein were left intact so that recurrence developed and in some cases there was injury of the nerve filaments resulting in atrophy of the testicle and absolute impotence.

The author reports eleven cases in which he performed the Ivanisevich operation. Both the immediate and the late results were excellent in all except one. In the one exception the technique was faulty. While in this case the anatomical result was good, the impotence that existed before the operation persisted.

ANDREY GOSS MOROZ, M.D.

MISCELLANEOUS

Constantinesco, P.: The Interpretation of Plates in Intravenous Urography (L'interprétation des images d'urographie intraveineuse). *J. d'uról. méd. et chir.* 1934, xxxviii, 97.

The author summarizes the principles of intravenous urography as follows:

1. Preparation of the patient. Proper preparation of the patient is essential for good plates. It consists in evacuating the intestines of feces and gas as completely as possible. This can be accomplished with purgatives or enemas supplemented by the administration of charcoal or a proper diet.

2. Number of plates. For maximum information at least three plates are necessary. One of the plates should include the bladder.

3. The shape of the bladder. The image of the bladder is a reliable index of the function of the kidneys. If there is no obstruction to the excretory passages a strong bladder indicates a good condition of the kidneys, and a weak bladder a poor condition of the kidneys.

4. Contrast medium. It seems that abrodil and its derivatives are preferred at the present time although all of the substances employed have the same properties and effects.

5. Ureteral compression. Compression of the ureters is one of the best methods of improving the image, as by producing stasis it increases concentration. In order to avoid alteration of the images and errors in their interpretation, the compression should be applied on both sides at the same time and should be equal. Compression should not be used in all cases. It is of no value when there is manifest stasis. It is indicated only when an early lesion is suspected or when an increase in the intensity of the images is desired to determine possible differences in the two sides. Compression of the ureters may show a ureteral dilatation which otherwise would not be noticed.

6. Interpretation of the image. There should be close collaboration between the urologist and the

roentgenologist. The principles on which the interpretation is based are those of Lichtenberg and Ravasini. According to the principle of Lichtenberg the image appears in cases in which the kidney is functioning and does not appear when the kidney is destroyed. Consequently a regular and sharp image indicates a good kidney, while a weak and late image indicates a poor kidney and absence of the image indicates destruction of the kidney. Practically, this criterion may lead to error if there is stasis in the excretory passages and if elimination is very rapid. According to the principle of Ravasini, which is based on the appearance, persistence and disappearance of the image, an image which appears and disappears quickly indicates a good kidney, while an image which appears late, persists, and disappears slowly indicates a poor kidney. When the kidney is destroyed there is no image.

A comparison must be made with an image obtained under normal conditions. At first there are two small spots which gradually enlarge and outline the renal pelvis and calyces. The outline of the bladder soon appears in the form of an arc. At a later stage the image of the renal pelvis is continuous with that of the ureter. This is the period of maximum elimination and is of short duration.

Soon the ureters become visible while the bladder enlarges.

Both sides must be compared in order to determine the normal and the abnormal kidney. Many urologists are of the opinion that the intravenous method cannot be relied upon to show changes in the ureters. Even strictures or large dilatations may not be seen.

In renal tuberculosis the results are variable and no fixed type can be established unless one kidney has been destroyed. A large hydronephrosis can be seen satisfactorily when the kidney is still functioning. A small hydronephrosis cannot be diagnosed because the dilatation is not sufficient. The diagnosis of hydronephrosis is based on stasis with dilatation and not on dilatation without stasis.

Care must be taken to avoid confusing the images of nearby organs with those of the urinary tract. The colon with its folds and gaseous or solid contents may mask the image of the urinary organs. Calcified glands may suggest ureteral calculi if they are situated over the ureter. The best method of avoiding these errors consists in exposing a plate before giving the intravenous injection and comparing this plate with the plates made after the injection.

AARON S. SCHWARTZMAN, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS MUSCLES, TENDONS, ETC.

Pellini, M.: Essential Fragilitas Ossium; Osteogenesis Imperfecta; Osteopethtyrosis (Della fragilita ossea essenziale osteogenesi imperfetta osteopethtyrosi) *Arch. di chir. infante*, 1934, 4, 141.

Pellini precedes her discussion of osteogenesis imperfecta by a review of normal osteogenesis, the changes produced by abnormalities of the processes of periosteal and enchondral ossification, and some of the important factors in pathological conditions of bone. She regards osteogenesis imperfecta as an early form of osteopethtyrosis, a systemic disease affecting organs of mesenchymal origin which is characterized pathologically by a deficiency in periosteal ossification and clinically by a marked tendency of the bones to fracture. Her discussion of this condition includes various theories as to its etiology and pathogenesis and its clinical symptoms, roentgen signs, pathological anatomy, treatment, and prognosis.

She next reports a case of osteogenesis imperfecta of the hereditary type in an infant twelve hours old. This case did not present the classical clinical picture for although there were numerous recent and old fractures, there was no micromegaly nor bone atrophy. When the child was four months old roentgen examination disclosed an unusual condition the meta-epiphyseal ends of the long bones being defined by two thick, opaque, parallel lines separated by a transparent space. The author regards this finding as a sign of abnormal enchondral ossification associated with abnormality of periosteal ossification. *ROBERT T. LARSON, M.D.*

Duchamp, P.: The Evolution of Essential Cysts of Bone (De l'evolution des kistes essentielles des os) *Rev. d'orthop.* 1934, 10, 9.

This article is based on about fifty cases of essential cysts of bone and a review of the literature.

The author states that a cyst uncomplicated by fracture will usually develop slowly thinning the cortex and extending along the shaft of the bone, always respecting the epiphyseal line. It may subside spontaneously and never cause disability. When a fracture occurs there is no delay of union, but the cyst persists as a rule and the fracture may recur. Fracture is followed by spontaneous cure of the cyst in only rare cases.

After operation the cyst usually heals and does not recur. This was the outcome in twenty four of thirty three of the author's cases. In one case simple cleaning out of the cyst resulted in cure. Cleaning out and packing with an inert paste was followed by complete healing in two cases, one of

which was observed after twenty three years and the other after five years. Bridging and filling the cavity with an osteopethtyrotic graft was done by the author in one case and by other surgeons in two cases. In all of the cases so treated there was good consolidation which persisted from four to eight years after the operation.

However in some cases the cure is imperfect or the treatment fails. In the case of a boy of fourteen years who had a large cyst in the upper end of the humerus, the roentgenogram taken three months after curettage and the insertion of bone grafts showed a satisfactory result, but fifteen months later the cystic condition had spread over a much wider area and the bone grafts had disappeared.

In three of the thirty three cases operated upon by the author repeated roentgenograms showed the presence of a cyst although the patients were clinically cured. In three others the cysts persisted in almost the same form as before operation. In another group of three a postoperative fracture occurred. In most cases with unsatisfactory results, bone grafts were used, but in one a fat graft was employed and in another only curettage was done.

The author concludes that all cysts should be treated by operation, and that the insertion of bone grafts is the best method of filling the cavity.

WILLIAM ARTHUR CLARK, M.D.

Coley, B. L. and Higinbotham, N. L.: Solitary Bone Cyst, the Localized Form of Osteitis, Fibrous Cystica. *Ann. Surg.* 1934, 101, 432.

The solitary bone cyst appears during the period of childhood and adolescence, which is also the period of greatest bone growth. It occurs most frequently in the metaphyseal region of certain long bones, chief among which are the femur, humerus, and tibia. As the symptoms are usually extremely mild, the condition is often not suspected before the occurrence of a pathological fracture. In cases without fracture the duration of symptoms from the onset to the time of the patient's admission to the hospital averages more than two years and in some cases (those of latent bone cysts) may range from five to ten years or more.

Physical examination alone rarely furnishes a clue to the condition unless fracture has occurred, and the diagnosis is seldom established until roentgenograms are made. The area of localized bone destruction which is close to the epiphysis, but always on the diaphyseal side, with circumscribed expansion of the cortex and often some trabeculation makes a characteristic roentgenographic picture which is usually easily recognized.

Cystic processes in the long bones somewhat resembling both giant-cell tumor and bone cyst have

been described. The authors believe that the giant cell variety of bone cyst occupies an intermediate position between simple bone cyst and giant-cell tumor. It occurs more nearly at the time of union of the epiphysis, whereas bone cyst begins at an earlier age and giant-cell tumor after epiphyseal union has taken place. However its clinical course runs more closely parallel with that of simple cyst than with that of giant-cell tumor.

In general it may be said that the true bone cyst begins during childhood, the giant-cell variant during adolescence, and the giant-cell tumor after skeletal growth has been attained.

In cases of bone cyst the entire course of the disease is indicative of essentially benign process. The cyst tends to increase in size only very slowly, to heal spontaneously and to be aided in healing by the occurrence of a pathological fracture. It yields to conservative surgery. It is always surrounded by a shell of cortical bone which is never completely eroded and remains intact unless a fracture occurs. Following fracture which may be caused by a very trivial injury, rapid formation of callus and progressive healing with firm bony union are the rule. Fracture does not always result in complete healing of the cyst and at a later date a second fracture may occur.

As yet, no agreement has been reached with regard to the etiology of simple bone cyst. The condition has been attributed to trauma, inflammation, infection, faulty calcium metabolism, and progressive osteodystasia.

The average age of the twenty-six patients whose cases are reviewed by the authors was fifteen and nine tenths years. The youngest patient was a boy of four and the oldest a woman of forty-one years. Fifteen of the patients were males. The onset of the symptoms of a pathological fracture occurred in seventeen cases. The condition involved the femur in ten cases, the humerus in nine, the radius and fibula in two each and the tibia ulna a rib or a digital phalanx in one each.

When a fracture has occurred in a previously unrecognized bone cyst manipulation to obtain satisfactory position, if necessary, should be followed by immobilization during the healing period. This is usually sufficient for a satisfactory result.

For cases in which the cyst is recognized before fracture occurs the authors recommend operative interference consisting in exposure of the involved area, the formation of a window large enough to give access to the entire cavity, careful curettage of the entire contents down to the cortical bone and closure of the incision without packing.

The prognosis for a satisfactory anatomical and functional result is good.

NORMAN C. BULLOCK, M.D.

Lattman I. A Review of Ewing's Tumor with Case Reports. *Bull. J. Radiol.*, 1934 vii, 194.

Ewing's tumor is a bone tumor of non-osteous origin which is thought to arise from the perivascular

lymphatic endothelium. It usually destroys the bone by pushing up the cortex and producing "onion-skin" layers. It is soft, cellular, vascular and lobulated. It infiltrates the surrounding tissues and metastasizes to the lungs, lymph nodes, and skull. On microscopic examination it is found to be composed of densely packed cells of various shapes showing numerous mitotic figures. It may contain a few capillaries but it shows very little stroma.

The cause is unknown. The condition occurs most frequently before the twenty fifth year of life and is usually associated with trauma.

The first symptoms are pain of an intermittent and varied character and tumor formation. There may be transient remissions of the symptoms.

In the early stages the roentgenogram shows only a thickening of the periosteum and cortex suggesting osteomyelitis. As the disease progresses the tumor extends parallel with the long axis of the bone, the cortex thickens and shows increased density in the region of the swelling, and the thickened periosteum becomes laminated and assumes the typical onion-skin appearance. The rapid response of the tumor to irradiation is almost as diagnostic as biopsy.

The prognosis is unfavorable because in spite of the rapid response of the tumor to irradiation multiple tumors, either metastatic or primary, always develop. Amputation is of little value.

MAURICE L. DALE, M.D.

Weinberg, E. D. and Ward, G. E.: Diathermy and Regeneration of Bone. *Arch. Surg.* 1934 xxvii, 1221.

The authors report experiments carried out on dogs which demonstrated that diathermy properly applied will raise the temperature of the bones and muscles. As the rise in the temperature is accompanied by an increase in the local circulation, this method should be of practical value for bone regeneration.

The article contains photomicrographs taken at varying intervals in the experimental work.

PAUL C. COLONNA, M.D.

Ghormley, R. K. and Stuck, W. G.: Experimental Bone Transplantation with Special Reference to the Effect of Decalcification. *Arch. Surg.* 1934 xxvii, 742.

In experiments on dogs Ghormley and Stuck performed a series of transplantations of bone to determine what, if any, difference could be noted in the rate and type of healing of grafts taken from bones of different regions or of different structure, and what, if any, effect on the rate and type of healing would be produced by decalcification of the animals.

They found that in the old animals periosteal transplants did not produce new bone. Cortical transplants did not completely die but united slowly with the bone of the host and showed decreased calcification roentgenographically at the end of three months. Cancellous bone united more quickly and

more firmly whether it was taken from the cancellous bone of the ilium or from the endosteum of the tibia, and showed evidence of increased calcification roentgenographically at the end of three months.

The dogs placed on a "decalcifying" diet until the time of the transplantation showed evidence of a decidedly more active production of new bone, both around the cortical transplants and around the cancellous transplants.

The authors believe that the union of grafts and probably any new formation of bone are due largely to the transformation of local cells into a matrix or basic substance which, under the effect of certain stimuli, adds to itself the calcium and other salts necessary for its transformation into bone. From the practical standpoint it is to be noted that this process is apparently accomplished more easily when the transplant is of cancellous bone, probably because cancellous bone is more readily permeated by the matrix from the host and its calcium may be more easily mobilized and redeposited.

The authors are convinced also that the process of reducing the calcium content of the bone may hasten union after transplantation. While this also may be explained by the fact that a decalcified graft is more readily permeated by the matrix, the authors believe that added stimulation is brought about by the chemical change of decalcification.

Buckley, C. W.: The Causes and Treatment of Arthritis. *Brit M J* 1934 1, 469.

The author discusses chronic rheumatoid arthritis as defined by the Arthritis Committee of the British Medical Association. Cases of this condition have been subdivided into primary cases, in which no focus of infection can be found, and secondary cases, in which such a focus may be identified. Disastrous results may follow the removal of numerous foci, probably because of the liberation of toxins and micro-organisms into the general circulation. Buckley believes that emotional strain or shock and the combination of cold and damp with unhygienic conditions favor the development of rheumatoid arthritis by decreasing the general resistance to disease. He cites Coste who rejects the theory of focal infection, denies that there is proof that streptococci are responsible for the disease, and believes that treatment of septic foci should be carried out only in the hope of improving the general resistance to disease. Buckley believes that in the primary form of the condition attention to the general health, mode of life, and endocrine deficiencies should supplement other lines of treatment.

He states that while opinions vary widely with regard to the rôle of streptococci in arthritis, and while the case against the streptococci commonly found in septic foci associated with rheumatic disease has not been proved, nevertheless these bacteria should be regarded with great suspicion. Although numerous cultural strains of streptococci have been found in rheumatic disease, some character common to all of them is the important factor

producing tissue reactions of the rheumatic type. Rosenow believes that certain strains of streptococci have a special affinity for joints and connective tissue. According to some investigators, the arthritis produced in rabbits by the injection of streptococci is not of the rheumatic, but of the septic type. There is considerable evidence in support of the view that the articular and other lesions of rheumatic fever and of acute infection or rheumatoid arthritis are due, not to the presence of the infecting micro-organism in the affected tissues, but to allergic effects. From such evidence has developed the theory that a septic focus continually throws into the blood substances which act upon certain tissues for which they have an affinity and cause arthritis or fibrositis by sensitizing these tissues.

Some European authorities believe that there is a type of rheumatoid arthritis which is tuberculous in origin. Although it cannot be denied that the constitutional type and the symptoms are often similar to those of tuberculosis, the author has not become convinced that the special lesions are of a tuberculous nature.

Buckley believes that great damage has been done by the injudicious administration of vaccines, but admits that when vaccines are skillfully used they may be of great benefit. He states that it is difficult to find a true guide, for while large doses have produced no reaction at all in some cases, small doses have caused a severe reaction in others. Some investigators regard vaccines merely as an adjuvant, whereas others, among them Croze, are enthusiastic advocates of their use.

While it seems illogical, when there is already an invasion by a living and toxin-producing bacterium to inject into the system dead organisms of the same type, there is clinical evidence that cure has sometimes followed such treatment. The author believes that vaccines of a specific type should be employed only when an infective focus has been identified and removed. If there is any marked reaction in the joints or any pyrexia the doses must be reduced and the intervals between the injections must be increased.

Buckley regards protein shock of doubtful value and classifies shock vaccine with it. He states that they should be used with the same precautions as autogenous vaccines and abandoned if favorable improvement does not occur soon.

While vaccines are generally administered by the subcutaneous or intramuscular route, the intradermal route has been found of value in some cases and is safer as absorption is slower. It has been found of special value in the use of certain French vaccines.

In Europe compounds of sulphur and gold have been employed, but experience with these substances is still limited.

Among the remedies suggested and used by the author are compounds of iodine, calcium, and Vitamin D in the form of cod liver oil.

ROBERT C. LONGMEAR, M.D.

Conway F M: *Osteochondritis Dissecans. Intra Articular Osteocartilaginous Loose Bodies. A Clinical Study Based upon Ten Personally Observed Cases.* *Ann Surg* 1934, *xcix*, 410

Osteochondritis dissecans has been called 'Paget's quiet necrosis of joints,' 'subchondral fracture of the articular condyle,' 'osteochondrolysis traumatica,' 'articular malacopthalia,' 'partial epiphyseal necrosis' and 'arthrolithiasis of unknown origin.' It is a non infectious process which involves the articular cartilage and the subchondral region of certain long bones of the extremities and by sequestration from the articular cartilage produces an osteocartilaginous loose body the structure of which undergoes a curious change in the joint cavity.

The condition occurs most often in the knee joint and next most often in the elbow joint. In the knee joint osteocartilaginous bodies may arise from the articular surfaces of the femur patella, and head of the tibia. In the femur they are formed most commonly from the lateral aspect of the medial epicondyle. They may occur also as osteophytes during the course of an osteo-arthritis as the result of breaking away of the diseased tissue or may be formed by proliferative changes in the synovial membrane such as those occurring in the condition known as synovial osteochondromatosis.

No entirely satisfactory explanation of the disease has yet been offered. Among the causative factors suggested are trauma, low-grade bacterial infection, a congenital predisposition of the femoral epiphysis, mycotic embolus, and heredity.

In the development of the condition are three distinct stages corresponding to the extent of the sequestration of the fragment.

In the first stage there is only a fairly well demarcated prominence of the articular surface, and the articular cartilage covering this elevation is of a color different from the rest of the cartilaginous surface. The ease with which this articular osteocartilaginous prominence may be removed is in striking contrast to the difficulty with which normal articular cartilage can be removed from the end of a normal femoral articular surface.

In the second stage of the condition the fragment has become more distinctly separated and lies within the excavated area of the articular surface, being held by the merest shred or by a fairly firm adhesion. The fragment is easily removed. Surrounding the excavation, which resembles the bite of a rodent, the articular cartilage is of a peculiar appearance having an ivory like color and in contrast with the normal articular cartilage appearing buff-colored. The cartilage is not firmly attached to the articular end of the underlying cancellous bone, and is easily removed for a varying distance from the focus of sequestration. It may be lifted off as easily as if it had been dissected free. This characteristic was responsible for the term 'osteochondritis dissecans' which was first applied to the condition by Koenig.

The third stage of the condition is characterized by complete sequestration of the fragment from its

bed on the articular surface into the joint cavity. The fragment may remain freely movable within the joint cavity where it is bathed by the synovial fluid, may become lamellated in structure by a process of accretion, or may become affixed to the synovial wall of the joint. The excavated cavity which is lined with a thin velvety layer of reddish-gray tissue presents no distinctive features. Curettings of the foci reveal no specific pathological picture, and cultures of the curettings removed at operation have shown no bacterial growth.

After the fragment has become loosened from the articular surface it undergoes degenerative and regenerative changes, both while it still remains attached by a pedicle and after it has been completely extruded within the joint. After its complete liberation within the joint all bone which has had a blood vascular circulation becomes necrotic and further necrosis and calcification occur in the articular cartilage. The fibrocartilage and the fibrous tissue along the surface of separation receive sufficient nutrition from the synovial fluid and proliferate, thus causing a steady increase in the size of the loose body.

The character of the synovial membrane depends upon the amount of irritation to which this membrane has been subjected by trauma from the loose fragment or fragments, the extent of the hemarthrosis and the length of time these two factors have been present. Changes from a simple oedema of the synovial papillae to a pronounced hypertrophy of individual and multiple single papillae which have been in direct contact with the loose fragment have been observed.

The pathological discussion is concluded with the following summary:

1 The condition occurs more often in males than in females.

2 It is most common between the ages of fifteen and thirty five years.

3 The fragments may be of the following character:

a. Recent detachments, in which the bone and cartilage are living and there are no proliferative changes in the articular cartilage. It is in cases with such fragments in which there is no sign of a morbid process, that the clinical evidence strongly suggests a traumatic origin.

b. Bodies present in the joint for a longer time in which the articular cartilage shows proliferative changes.

c. Bodies showing a marked degree of cartilaginous proliferation.

d. Bodies showing marked cartilage proliferation.

4. The most common site of osteochondritis dissecans is the knee, and the next most common site the elbow.

5 The condition is usually unilateral.

6 The bodies may be completely or incompletely detached or may acquire a secondary adhesion to the synovial membrane. When they are incompletely separated they are usually attached by a hinge of

articular cartilage to a defect on the articular surface which corresponds to them in size and shape.

7 Their continued presence in a joint may bring about changes of an osteo-arthritic nature.

In the cases in which the roentgenogram shows merely a line of demarcation of the femoral condyle there is usually a history of indefinite symptoms of weakness and disability for a period ranging from two months to two years. The knee is described as not as strong or reliable as the other. Often the patient states that the affected limb is unable to stand strain as well as the other limb. With further sequestration of the fragment without complete loosening, the symptoms of locking and involvement of the synovial membrane occur.

In the stage with complete sequestration of a fragment within the joint, the symptoms include. In addition to an occasional attack of locking, those referable mainly to the synovial membrane. Swelling of the knee is the most persistent and annoying feature. This is due, first to hypertrophy of the synovial membrane itself in the nature of a traumatic hypertrophic synovitis, and second, to an increase in the synovial fluid contained therein, and is an expression of synovial reaction to repeated trauma from the loose fragment.

In the author's series of cases the symptoms, mentioned in order of decreasing frequency were pain, disability, swelling, and the presence of a movable body. In the majority of cases the knee was slightly swollen and there was visible fullness in the quadriceps bursa. Flexion and extension were limited, and varied in degree.

The roentgen findings are diagnostic. Stereoscopic roentgenograms are invaluable especially in the early stages.

The treatment indicated is arthrotomy with removal of the sequestered fragments. The best time for the operation is the stage of demarcation, before complete sequestration has occurred and when the synovitis is minimal.

In the author's cases which were followed for more than a year no recurrence of the condition was demonstrated either clinically or roentgenographically.

Norman C. Bullock, M.D.

Perlow, S. Markle, P. and Katz, L. N.: Factors Involved in the Production of Skeletal Muscle Pain. *Arch Int Med* 1934, 44, 514.

The cause of muscle pain has been a subject of controversy for many years. Although it is now generally accepted that ischemia is the cause of the pain occurring in angina pectoris and intermittent claudication, the immediate factors responsible have not been fully established.

This discussion of the action of various factors in the production of muscle pain is based on observations made during and after exercise of the muscles of the forearm and leg under a variety of conditions in the cases of ten young normal subjects.

From their findings the authors conclude that the pain-producing substance is a chemical product which

is formed by muscle metabolism not only during exercise but also while the muscle is at rest. The rate of its formation is slow while the muscle is at rest, but is greatly accelerated during exercise. The substance is diffusible into the blood stream and can be carried away. In the presence of an adequate amount of oxygen it can be changed locally into substances which do not cause pain. Interference with either its mechanical removal by the circulation or its local oxidation will lead to its accumulation in the muscles. If the interference is sufficiently great in relation to the muscular activity of the part, the concentration of the pain-producing substance can become sufficient to exceed the threshold necessary to stimulate the pain nerve endings. This threshold may be variable, and it is not at all unlikely that one of the actions of ischemia, circulatory stasis, anoxemia, and exercise consists in increasing the susceptibility of the pain nerve end-organs to the pain-producing substance, thereby lowering the threshold to pain.

Blick, E. M.: Skeletal Muscle Sarcoma. *J Surg* 1934, 32, 940.

The author defines a muscle tumor as a neoplasm involving the muscle body which is composed of muscle fibers only when these fibers are involved spatially.

In a series of thirty-five cases of sarcoma of skeletal muscle, fibrosarcoma was most frequent and neurofibrosarcoma next in frequency. Osteogenic sarcoma occasionally invades the adjacent muscle at its junction with the bone and perosteum, but may involve it directly by perforating the periosteum and muscle sheath. Myosarcoma, myxosarcoma and chondrosarcoma of muscle were also found in the cases reviewed.

Sarcomata may originate from within the muscle, from sources in direct contact with the muscle, or as metastases. The majority of sarcomata of muscle occur between the ages of twenty and forty years. The ages of the patients whose cases are reviewed by the author ranged from ten to sixty years. Hemangiomata, which are probably congenital, are observed in early childhood.

In the cases reviewed in which the duration of the tumor was recorded the fibrosarcomata grew much more rapidly than the neurofibrosarcomata. The latter were present for from four to twenty-seven years, remained dormant for many years, and grew rapidly for a brief period following trauma.

Intramuscular sarcomata are found most often in the thigh, abdominal wall, and forearm. In 15 of the cases reviewed they occurred at these sites with about equal frequency. The location of the primary muscle tumor deep in soft and resilient structures, makes palpation and early discovery of the neoplasm difficult. The size of the tumor when it is first discovered varies from that of a pigeon's egg to that of a large grapefruit. Pain is rarely an early symptom. It is usually of a dull and inconstant type. The tumor itself is usually not tender.

except following trauma. It is characteristically firm. A soft muscle tumor suggests a hemangioma. However, in cases of soft tumors of muscle the myxosarcoma must be ruled out.

As a rule the fibrosarcoma is not definitely demarcated but extends into the normal connective tissue surrounding it, while the neurofibrosarcoma is sometimes almost encapsulated. Metastases do not involve regional lymph nodes first, but extend directly by way of the blood vessels and usually occur first in the lungs.

Primary intramuscular sarcomata should be excised widely with resection of the entire muscle if necessary. A careful search should be made for involvement of nearby fascial layers. A prolonged course of deep irradiation is advisable in addition. In cases of the larger secondary sarcomata of muscle the excision must be wider. When a neurofibrosarcoma is not well encapsulated amputation is necessary as this neoplasm is unaffected by roentgen irradiation. Success of treatment depends on (1) the grade of malignancy of the tumor at the time of treatment (2) early recognition and differentiation of the neoplasm and (3) the completeness of removal of the tumor. RUDOLPH S. KRICH, M.D.

McBride, E. D. Estimating the Extent of Disability. *Internal Clin.* 1934 ii 206

The factors to be considered in the determination of disability following injury have been rated by the author according to their importance as follows: (1) quickness of action 10 per cent (2) coordination of movement, 20 per cent (3) strength 20 per cent (4) security 10 per cent (5) endurance 20 per cent (6) safety as a workman 10 per cent and (7) prestige and physique 10 per cent. The determination of disability requires also consideration of the normal function of various parts of the body. The chief functional capacities of normal parts to be considered are punching grasping reaching kicking, springing stepping pushing pulling lifting holding throwing tearing and swinging. Clinical evidences of injury are tenderness, muscle spasm, ankylosis, shortening atrophy paralysis, malformation, inflammation and swelling.

ALTON OCHSNER, M.D.

Hanausek, J.: The Treatment of Scoliosis in Children and Adolescents by Stimulation of the Growth of the Concave Parts of the Vertebral Column (Traitement de la scoliose chez les enfants et les adolescents par la stimulation de la croissance des parties concaves de la colonne vertébrale). *Rev. Orthop.* 1934 xli 219.

The author proposes a new method of treating the scoliosis of children and adolescents, which consists in stimulation of the growth of the concave parts of the vertebral column. This method is based on (1) the well known fact that in cases of chronic inflammation of bony tissue at the level of the diaphysis the irritation of the epiphyseal cartilage results in a pathological growth in length of

the extremity, and (2) the possibility of stimulating the epiphyseal cartilage, which has been demonstrated among others by Mass who obtained elongation of an extremity by repeatedly painting it with tincture of iodine.

For practical purposes, Hanausek recommends irradiation of the concave portions of the vertebral column with an electric lamp (at night with the patient in a ventral position and in the course of a few hours) the use of diathermy and treatment of the corresponding concave portion of the vertebral column and of the pelvis once a week with tincture of iodine and rubefacients.

AARON S. SCHWARTZMAN, M.D.

Ferguson, A. B.: The Clinical and Roentgenographic Interpretation of Lumbosacral Anomalies. *Radiology* 1934, xlii 548

Anomalies in the lumbosacral region do not produce symptoms if the mechanical weakness is compensated by muscles and ligaments.

Decompensation may occur as the result of an increase in weight and stress, a decrease of muscle tone and power with increased age, a sudden change from an active to a sedentary life or a sudden acute strain in an unusual position.

The use of pelvic belts or strapping is advised for acute cases but such artificial support should not be continued indefinitely as it tends to weaken the muscle until the patient suffers sprains as much with the belt as without it. In the cases of patients who have repeated and severe attacks in spite of conservative treatment, a fusion operation should be done to stiffen the lumbosacral and sacro-iliac joints. In cases of demonstrable arthritis, however this is contra indicated.

Lumbosacral anomalies are probably the most common causes of sciatica and coccygodynia. There may be numbness or sensations of heat or cold in the buttocks and extending down the thighs and calves.

The diagnosis is based on (1) the roentgen findings, (2) pain or fatigue which becomes worse on exercise and is relieved by rest, and (3) proof of the absence of genito-urinary intestinal and skeletal disease. Surgical experience has shown that when the roentgen findings are negative the symptoms are more often lumbosacral than sacro-iliac.

Stability in the lumbosacral region depends to a considerable extent on the articular facets of the lumbosacral articulation. It is greatest when the joint planes are sagittal. Asymmetry of these joints may cause symptoms. The most severe symptoms are caused by a pair of joints in a sagittal plane on one side and a frontal plane on the other side.

An anomaly which does not often cause symptoms of itself is failure of union between the laminae of the fifth lumbar or first sacral vertebra. Sometimes the ossification center for the spine of the first sacral vertebra remains as a separate bone between the ununited laminae, a condition which causes symptoms especially if the free piece is connected with the spine of the fifth lumbar vertebra. Under such con-

ditions there is a feeling of pressure in the lower lumbar region on complete extension of the spine.

The so-called transitional vertebra is a common anomaly. It may be the fifth lumbar or the first sacral. It varies from a slight enlargement of a transverse process to complete fusion of the process with the sacral wing. Symptoms are usually present, especially if there is a false joint. Pain may occur on both sides or either side, regardless of the side on which the defect is found.

The spinous processes may be so close together that they impinge on each other causing pain on hyperextension. Contusion, such as may be produced by extreme hyperextension in diving, may cause symptoms persisting for months.

Spondylolisthesis may be caused by trauma, but is due primarily to failure of union between the laminae and pedicles of the fifth lumbar vertebra which permits the body to slip forward over the sacrum leaving the spine and laminae behind. This displacement may occur without trauma, but the author has never seen such a case. It may be congenital. The defect between the pedicle and lamina is best demonstrated in an anteroposterior roentgenogram taken at an angle of about 45 degrees from below upward. It is usually visible also in the lateral view. When it is found without displacement of the vertebra it is called *prepondylolisthesis*.

Posterior displacement of the fifth lumbar vertebra is one of the most common of the significant lumbosacral anomalies and very often associated with symptoms. Being due to abnormal mobility between the fifth lumbar vertebra and the sacrum, it is variable, being found at one examination and not at another, depending on the position of the patient. In such cases the arch articulations are usually of the anteroposterior type. The displacement is caused by hyperextension, the fifth lumbar vertebra slipping backward and locking over the edge of the sacrum.

An unstable lumbosacral angle may cause symptoms. A vertical line through the center of the third lumbar body may pass as much as 3 in. in front of the sacrum. Under such conditions the weight must be maintained by muscles and ligaments. If the plane of the articular surface of the sacrum tilts as much as 45 degrees from the horizontal, the strain is noticeable, and if the angle is 55 degrees, the strain is severe. This angle is measured in relation to the edge of the film which is accurately placed parallel with the patient's trunk when exposed.

By a protective mechanism, the patient, when standing, tilts the pelvis backward, thus reducing the lumbosacral angle and diminishing the strain. Lateral views made with the patient in the standing and horizontal positions for comparison are important in the diagnosis. If the protective mechanism is evidenced by a decrease in the lumbosacral angle in the standing position, the lumbosacral vault is the cause of the symptoms.

Abnormal mobility may result in occasional slipping of the fifth lumbar vertebra. The patient feels,

and sometimes hears, a sudden snap which is followed by deviation of the spine away from the painful side.

WILLIAM ARTHUR CLARK, M.D.

Konjetzny G. E.: The Pathology and Pathological Anatomy of Calvé-Perthes Disease. Osteochondritis Coxae Deformans Juvenile (Zur Pathologie und pathologischen Anatomie der Perthes-Calvé'schen Krankheit, Osteochondritis coxae deformans juvenile). *Acta chirurg. Scand.* 1934, LXXI, 361.

The author gives a description of the pathological anatomy of two cases of Legg Calvé-Perthes disease. The first was that of a seventeen-year-old boy with a short history of illness and marked changes in the hip demonstrable in the roentgenogram. In this case resection of the head of the femur was done. The second case was that of a boy of fourteen years who had been under clinical and roentgenological observation for eight years and had shown clinical recovery at the age of ten years, four years before his death from tuberculosis. In this case specimens obtained at autopsy were studied. The affected hip showed symmetrical and cushion-like thickening of the joint cartilages with extensive fibrous degeneration of the upper layers. The rest consisted of necrotic osseous bars enclosed at one point by overgrown joint cartilage.

The author believes that the etiology of the disease has not yet been established, but that the embolus-infarct theory of Arxhausen has received the most general acceptance.

BARBARA B. SYMONS, M.D.

Aleman, O., and Friberg, B.: On Injuries of the Meniscus of the Knee Joint. *Acta chirurg. Scand.* 1934, LXXIV, 319.

The authors report the findings of a study of 186 cases of injury to the meniscus of the knee joint which were operated upon by Aleman in the Military Hospital, Stockholm. The medial meniscus was injured in 160 and the lateral meniscus in 26.

Because of the differences in structure and function of the medial and lateral tibiofemoral articulations, lesions of the medial and lateral meniscus present fairly marked differences in several respects. There is a difference not only in the manner in which these lesions are produced, but also in the type of the rupture and the clinical picture. In the differential diagnosis of rupture of the medial meniscus, chondromalacia patellae is of chief importance. Knowledge of this condition has greatly facilitated the diagnosis of meniscal rupture and has prevented unnecessary operations on this meniscus.

The treatment of meniscal injuries is operative and consists in concentric resection into healthy tissue. Complete removal of the meniscus is contra-indicated. Arthrotomy should be done by an axial parapatellar incision supplemented, if necessary, by a posterior incision. The authors recommend a new instrument which facilitates the resection—a spring

knife "boutonné" for the concentric incision and a ring knife for severance of the posterior attachment of the meniscal fragment. By the use of these instruments injury of the joint cartilages is avoided.

The prognosis of meniscal injuries is very favorable. Of 153 patients who were re-examined 87 per cent were entirely cured and 13 per cent had only mild symptoms which, in nearly all cases, were due to patellar chondromalacia rather than the meniscal defect. In none of the cases was there a resulting arthritis deformans. Of 24 patients treated for rupture of the lateral meniscus who were re-examined, 80 per cent were found entirely cured and 20 per cent reported slight discomfort. Among the latter were 2 with arthritis deformans localized to the lateral joint and due apparently to the meniscal defect.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Hoard, P. Technique, Results and Prosthesis in Amputations of the Knee (Technique, résultats, et appareillage des amputations du genou) *Rev de chir. Par.*, 1934, lui, 301

The technique of disarticulation of the knee, Gritti's amputation, and low amputation of the thigh are described in detail. Although it was preferred to amputation by Guy de Chauliac and was performed by such men as Paré, Brasdor, Laney and Veleau disarticulation was later abandoned because its results were poor. During the latter part of the last century it was re-introduced by Polakoff and others who insisted on its value, and became the subject of active controversy.

Disarticulation is indicated as a temporary measure in emergency cases. Final disarticulation is not wholly to be discarded, but its indications are relatively few and unless favorable conditions are present and the technique is thoroughly understood, some other method of amputation should be used. A poor stump after disarticulation causes greater prosthetic difficulties than a poor stump after amputation. Many poor results with condylar deformities may be attributed to the performance of this operation in a more or less septic area.

The various techniques for disarticulation, including the so-called classical method and the methods of Letcne, Lejars, and Polakoff, are described. The author enumerates the advantages of the Ollier-Polakoff method, emphasizing that it leaves a subperiosteal knee with motion, forms a capsulomeniscoperiosteal sheath demonstrable in the roentgenogram, and permits articular closure under excellent conditions with preservation of the essential elements, the skin, round ligament and adipose ligaments being re-inserted in the posterior soft parts.

Postoperative care during the preprosthetic period is of importance. The patient should become accustomed to pressure of the stump against a hard surface or a sand bag. Early electrical massage should be applied to the muscles of the thigh. The osteo-

muscular subfemoral cushion should be developed, and the mobility of the stump increased by suitable exercises.

The temporary prosthesis of choice is the peg leg. As a rule the final prosthesis is applied too late. When the stump has become cicatrized and the postoperative edema has become absorbed, the temporary prosthesis may do harm as its continued use requires re-education of the patient for the final prosthesis. The shorter the interval between the operation and the application of the final prosthesis the better will be the results.

When Gritti in 1857 first described the operation which bears his name he had three aims in view: (1) amputation of the thigh as far as possible from its root to diminish the risk of the operation, (2) closure of the bony lacune at the lower extremity of the femur by means of the patella to prevent purulent infection, and (3) terminal end bearing. As Lucas-Championnière remarked, the first two of these are no longer of interest. Many surgeons fail to see any value in the Gritti operation, describing it as superfluous, complicated, and difficult, and claiming that it rarely gives an end-bearing stump. In spite of its apparently modern character, it is an old-fashioned procedure devised to meet indications that today are partially obsolete. It should never be practiced in an infected area. The successful results obtained from its use during the war can only partially counterbalance the adverse criticisms of such surgeons as DePape, Coulaud, Tuffier and Nové-Josseland. On the other hand when it can be performed in an aseptic field and with proper fixation of the patella the indications for it are definite, though relatively rare and its results are usually very good.

Hoard next discusses the various techniques for amputation of the thigh including those of Foulton, Carden, Morestin and Duval. He has not used them as he believes that end bearing can be obtained by simpler methods. He emphasizes that in sawing through the bone it is of great importance to avoid roughening or splintering of the bone and laceration or contusion of the periosteum as otherwise painful osteophytes may form and perforate the femoral vessels. When a good technique is used nerve sequelae are relatively rare. Resection must be performed most carefully and without undue traction. Care must be taken to avoid ligating the accessory branch of the internal sphenous vein with the other vessels. It is of great importance also to ascertain the normal vasomotor tone of the soft parts by a thorough preliminary clinical examination.

The postoperative treatment should include exercises and manual and electrical massage. As early as possible the patient should be encouraged to press the stump against a hard surface or sand bag. Finally the temporary prosthesis may be applied. The task of the surgeon is far from completed with cicatrization of the stump as the patient should be kept under observation until the final prosthesis has been applied with good results. This prosthesis

must be repeatedly adjusted to the stump as the latter changes rapidly.

The author believes that a good disarticulation of the Pollock type is superior to the Griggs amputation and transcondylar amputation because of the length and power of the stump, the broad weight bearing surface separated from the femoral condyles by a double articulation of the meniscus, and the impossibility of secondary patellar displacement.

In conclusion Huard says that a poor disarticulation is inferior to a Griggs operation or a successful low amputation of the thigh.

EDITH SEABRIGHT MOORE

Pozniakov, L. Surgical Treatment of Koehler's Metatarsal Disease (Traitement chirurgical de la maladie métatarsienne de Koehler). *J. de chir.* 1934, XLII, 667.

The ordinary resection of the heads of the metatarsals in Koehler's disease removes the disease focus, but interferes with the normal static conditions of the foot and changes the anatomical relations between the phalanges of the toes and the metatarsals which have been operated upon. The author overcomes the difficulties by substituting for the resected head of the diseased metatarsal an autoplasmic graft taken with its periosteum from the crest of the tibia. Transplanted into the cavity produced by removal of the head, the bone takes well and becomes moulded into the normal shape of the head of the metatarsal. Four cases treated in the manner described are reported with roentgenograms. The method gives good results, both anatomical and functional. It should be used not only in old cases which have reached the stage of arthritis deformans, but also in early progressive cases with intense pain in which medical treatment has little effect.

The fact that the free bone transplant takes well on the stump of the metatarsal shows that it is possible to use bone grafts to lengthen the stumps of amputated limbs and fit prostheses to them.

ADRIAN GORD MORGAN, M.D.

FRACTURES AND DISLOCATIONS

Seivaggi, G.: Bony Callus and Experimental Acidosis (Callo osseo ed acidosi sperimentale). *Ann. ital. di chir.* 1934, XLII, 37.

This article reports experiments carried out on rabbits to determine the influence of variations in the hydrogen-ion concentration of the blood on fractures. The rabbits were divided into three groups. Those of Group 1 were given a normal diet, those of Group 2 an acid diet, and those of Group 3 an alkaline diet. Those of Groups 2 and 3 were given also intravenous injections of lactic acid and weak solutions of sodium hydroxide. Fifteen days after the beginning of the experiment the radius and ulna were artificially fractured. The healing process was then studied by roentgen-ray examination and microscopic section at intervals up to sixty days.

The author was able to obtain only an acidotic state as determined by potentiometric determinations of the hydrogen-ion concentration of the blood plasma. In the acidotic animals he found retardation of ossification and diminished calcification of the callus, conditions similar to those in the rachitic state.

BARBARA B. SIMMONS, M.D.

Daland, E. M.: A Study of 236 Compound Fractures Treated at the Massachusetts General Hospital. *New England J. Med.* 1934, CCX, 983.

The author presents an analysis of 236 compound fractures treated during the period from 1923 to 1931. He divides the cases into 2 main groups:

1. Those of fracture caused by indirect violence (a) puncture wounds, and (b) extensive soft-part damage.

2. Those of fracture caused by direct violence (a) cuts, lacerations, and bullet wounds, and (b) extensive wounds from massive trauma.

In all of the cases antitetanic serum was given, the wound was covered with a sterile dressing, and temporary splints were applied before roentgenograms were made. The operative procedure consisted of thorough débridement with the knife rather than with the scissors and thorough irrigation of the widely opened wound with normal saline solution. Reduction of the fracture was then done if possible and followed by closure of the wound or the use of the Carrel-Dakin method, depending upon the extent of the trauma. Daland says that skeletal traction may be applied distal to the wound if this can be done under aseptic conditions. Primary internal fixation by bone grafts or bone pegs is not advocated. In the cases reviewed steel plates were rarely used. The results obtained are shown in tables in which the fractures are grouped anatomically, and are critically analyzed and discussed. The technique of the Carrel-Dakin treatment is described in detail.

The incidence of tetanus in the series was 0.48 per cent, that of gas-bacillus infection, 0, and that of persistent bone infection, 2.9 per cent. Sepsis followed treatment in 18 per cent of the cases. In the cases of mild puncture wounds its incidence was 6.3 per cent, whereas in the cases of wounds caused by direct trauma it was 25 per cent.

The author concludes from this study that the average compound fracture caused by indirect trauma, if treated early and adequately is no more serious than a simple fracture, that the results obtained by cleansing the small puncture wound, applying an antiseptic solution, and allowing the wound to granulate have usually been satisfactory, and that compound fractures from direct trauma are far more serious and call for very radical measures. He believes that some wounds may be tightly closed after débridement, but that the larger ones should be left wide open. He does not approve of loose closure or partial closure with drainage. He believes that the use of gas-bacillus serum as a prophylactic measure is unnecessary if adequate débridement is done. In conclusion he says, "Our results of treat-

ment by the present methods are quite satisfactory with the exception of the femur and the bones of the leg. There was too much sepsis in these groups. Radical measures should be used in a larger number of these cases' BARBARA B. STINSON M D

Jones, R. W.: Inadequate Immobilization and Non Union of Fractures. *Brit. M. J.*, 1934 1 936

Jones believes that, regardless of the site of the fracture delayed union and non union is due to either incomplete immobilization or discontinuance of immobilization too soon. He states that hyperemia of bone always results in decalcification and ischemia in recalcification. If a fracture is imperfectly immobilized, the frequent twisting strain causes recurring hyperemia with increasing decalcification. If adequate immobilization is discontinued too soon, before the final dense consolidation has occurred traumatic hyperemia is observed, recalcification ceases at once, decalcification supervenes, and non-union develops. In this second stage preliminary revascularization by a drilling or grafting operation may be necessary. Jones illustrates these principles by fractures of the navicular bone which he believes will unite if adequately immobilized in an unpadded plaster cast until there is roentgenographic evidence of consolidation.

Fractures of the neck of the femur can be adequately immobilized by the use of the Smith Petersen nail which prevents movement of the proximal fragment, "a method which secures union of the fracture in 90 to 100 per cent of cases." Intra-articular arthrodesis of the hip held by means of a Smith Petersen nail driven through the femoral neck and head into the pelvis results in firm consolidation. Non-union of the shaft of the ulna in fractures of both forearm bones can be prevented only by absolute limitation of radio-ulnar movement by complete fixation of both wrist and elbow which is maintained until there is roentgenographic evidence of consolidation. In infected compound fractures the initial stage of decalcification is prolonged. If it is immobilized the fracture will usually unite. BARBARA B. STINSON M D

Gangler J.: Late Results of Poorly Healed Fractures, with Special Regard to Fractures in Children. (Spätergebnisse schlecht geheilter Knochenbrüche, mit besonderer Berücksichtigung kindlicher Brüche.) *Chirurg.*, 1934 VI, 131

Fractures have been studied roentgenologically for about thirty years, about a generation. From more than 5000 cases treated during this period the author selected for his study those in which healing occurred under very unfavorable conditions and was followed roentgenologically when possible by serial roentgenograms. The purpose of the investigation was to follow the further development of the fractures not only from an anatomomorphological but also from a functional viewpoint.

As the final limit of the study was the completion of the growth of the bone, the cases are divided into

those of fracture occurring before the eighteenth year and those of fracture occurring after the twentieth year of age. These 2 large groups are subdivided into periods of six years and of ten years each. In the subgroup of from one to six years it was found that even when healing occurred in a phantastically poor position neither anatomical nor functional evidence of an old fracture is to be apparent today after thirty years. Many of the patients followed up had forgotten which arm or leg had been fractured. Therefore bilateral roentgenograms were necessary. Comparison of these was astonishing. In contrast was an operatively treated supracondylar fracture of the humerus in a child of five years and a child of six years. In one of these cases the result was and is anatomically good and functionally poor whereas in the other there is a pseudarthrosis but the musculature is so well developed that the patient is able to earn full wages at heavy labor. This comparison was carried out in all of the groups.

Gangler comes to the conclusion that there is a fundamental difference in healing in children and adults. In children function restores the normal anatomical form, whereas in adults the healing processes are unable to exert a decisive influence on anatomical formation and ultimate function depends to a large extent on the anatomical position in which the fracture heals. Therefore in the cases of adults the effort must be made to obtain the ideal position in order to prevent impairment of function whereas in the cases of children some reliance can be placed on the tendency toward self healing. PLANK (Z)

Marique, P.: Dislocations of the Inner End of the Clavicle and Their Surgical Treatment (Sur les luxations de l'extrémité interne de la clavicule et leur traitement chirurgical.) *Bordeaux chir.* 1934 No 2 34.

Dislocations of the inner end of the clavicle are rare as the bone breaks rather easily and the ligaments supporting the articulation are rather strong. Movements of the clavicle are complex and find their center of rotation at about the point of attachment of the costoclavicular ligament. For these reasons the clavicle may be termed a lever of the first class. The usual direction of displacements is explained by the fact that the joint surface is directed medially upward, and anteriorly. Posterior displacements, dangerous because of their encroachment on the mediastinal sinus, are produced by direct violence. Subluxations may occur with merely stretching or distention of the capsule, but in complete dislocations the rhomboid ligament is always torn. The muscular attachments to the clavicle have a definite influence on the type of displacement. Most active is the sternocleidomastoid muscle.

Reduction of subluxations is usually not difficult when the clavicle is manually forced into place and the shoulder manipulated in conformity with the type of displacement. However simple reduction of anterior and superior dislocations may be com-

placed by interposition of the joint meniscus. This may be combated by manipulation, or as has been done by Fognot, keeping the corresponding arm in hyperextension for a time. Reduction of subaternal dislocation is accomplished by raising the clavicle into place with some type of lever. Fixation, which is more difficult, may be accomplished by the use of metal sutures, sutures of rolled fascia lata, suturing the meniscus over the anterior surface of the joint, suturing the clavicle to the first costal cartilage, or fixation of the joint by a metallic screw. The author favors the use of fascia lata. He suggests that this be employed as a mattress suture after parallel tunnels have been drilled in the sternum and clavicle.

Marique reports a case of dislocation and fracture of the clavicle in which a musculo-spongerotic suture was done and a Desault bandage applied. The fixation was removed after ten days. After twenty days, abduction of 60 degrees was possible.

WILLIAM C. BRET, M.D.

Pellegrini, O. Anatomical and Roentgenographic Observations on the Elbow Joint During the Period of Growth and Their Relationship to Traumatic Lesions of the Articular Surfaces. (*Osservazioni anatomiche e radiografiche sul gomito durante il periodo dell'accrescimento e loro rapporti con le lesioni traumatiche dei capi articolari*). *Arch. di chir. e ginec.* 1934, 4, 1.

The author gives a detailed description of the anatomy of the osseous components of a series of elbows of children ranging in age from birth to twelve years. He then discusses the blood supply of the developing epiphyses as shown by injected specimens. He made roentgenographic studies also of a large number of individuals to determine the average age at which the centers of ossification appear and union of the epiphyses with the shaft takes place. He presents a table of the findings of a number of investigators regarding the appearance and final fusion of the various ossification centers around the elbow. Finally he takes up the various types of fractures and slipping of the epiphyses which usually occur in the developing elbow. He attributes them to the morphological and structural characteristics which he noted at different ages in each of the bony components of the joint, and expresses the opinion that certain types of fractures which occur particularly at certain stages of development occur solely because of these anatomical (morphological and structural) characteristics.

BARBARA B. STICKOW, M.D.

Beccari, C.: Observations on Fractures of the Neck of the Radius. (*Osservazioni sulla frattura del collo del radio*). *Policlinico*, Rome, 1934, 2b, sec. chir. 215.

Among the ninety-five fractures about the elbow which were treated at the Surgical Clinic in Florence during the past twenty-five years there were ten fractures of the head of the radius and one fracture of the radial neck.

Beccari reports the case of a man twenty-seven years old who, in a fall from a height, struck the inner side of the flexed and pronated forearm, sustaining a posterior dislocation of both bones of the forearm and a fracture of the neck of the radius in which the proximal fragment remained with the humerus. The dislocation was reduced by closed methods, and nine days later the proximal fragment of the radius was excised. The arm was immobilized for two weeks. After two months all motions were complete except flexion which was somewhat limited.

The author reviews the literature on fractures of the neck of the radius. He believes that such fractures are most common in youth, and that the line of fracture is below the epiphyseal line. The fracture may be associated with other injuries near the elbow joint. The diagnosis may require roentgen examination. Beccari advises active motion for cases without displacement and open reduction or removal for cases with gross displacement.

BARBARA B. STICKOW, M.D.

Støren, H.: Osteochondritis Dissecans in the Hip Joint as a Systemic Disease. A Case of Delayed Demarcation Process After Fracture of the Neck of the Femur. (*Osteochondritis dissecans in den Hæftgelenken als konstitutionsfælle Læse, senere en Fall eines tardiven Demarkationsprocesses nach Fraktur collis femoris*). *Acta chirurg. Scand.* 1934, 48, 491.

The author reports in detail two cases of hip-joint disease in which the roentgenograms showed somewhat similar changes in the heads of the femora, i.e. "demarcation of a piece of the upper part." In the first case, that of a man twenty-seven years of age, multiple joint changes with typical osteochondritis dissecans of the right knee were found at roentgen examination and operation and similar changes in the left knee and both hips at roentgen and clinical examination. The roentgenograms are reproduced and the clinical course of the condition is described. The father of the patient presented a similar clinical picture, and two brothers and one sister suffered from a similar polyarticular condition. In all except the sister the first symptoms were noted between the ages of eight and ten years. The sister first developed symptoms at the age of thirty. Her ankles, hips, and knees were affected first and later her fingers.

The author says that up to the present there are only nine cases of osteochondritis dissecans of the hip on record.

The second case reported by Støren was that of a man sixty years of age who sustained a fracture of the neck of the femur which apparently healed in good position. After a few months, during which he was able to walk with comparatively little discomfort, the pain gradually increased. Twelve months after the injury roentgenograms showed demarcation of a flat piece of bone from the upper part of the femoral head, which roentgenologically

bore a certain resemblance to osteochondritis dissecans. The case is cited as an instance of a process which resembles true osteochondritis dissecans roentgenologically, but probably has a quite different etiology.

BARBARA B. STANSON, M.D.

ORTHOPEDICS IN GENERAL

Rollier A.: The Clinic Factory at Leyrain (La clinique-manufacture de Leyrain) *Rev. méd. de la Suisse Rom.*, 1934 p. 364.

At the Rollier Clinic the establishment of a work shop for convalescents from tuberculous bone and joint disease has been found of value to improve the morale as well as the physical condition of the patients. If properly managed, such a workshop may have also an economic value. The beds are especially made to facilitate work done by recumbent patients. The springs are inclined the heads are reversible, and a firm tray is clamped on where the patient may work lying either on his abdomen or on his back. Before a patient is put to work his talents are carefully studied and the effect of

activities on his temperature is determined. The work selected for him is that to which he is best adapted. The types of work include watch repairing, the winding of armatures, and the making of small bells, parts for radios and telephones, and small articles of clothing. The electric motors and sewing machines are small enough to be used on the bed trays. In some instances a patient makes only a small part of an article and then passes it on to another who is better able to make another part.

The most striking result of the work has been the improvement in the morale of the patients. Patients with tuberculosis of the spine keep their backs in hyperextension while working. As those with open sinuses usually do not do well at work, such activities are limited to those whose sinuses have closed. Work is never allowed to the point of fatigue. Under the régime of heliotherapy and therapeutic work adults are cured as readily as children.

The article includes the reports of six illustrative cases and numerous illustrations.

WILLIAM ARTHUR CLARK, M.D.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Elkin, D. C. and Campbell, J. L.: Aneurisms: A Review of Sixty Two Cases. *Am J Surg* 1934
xvi 611

The authors report on sixty-two cases of peripheral aneurism treated by operation. In this series there were no cases of aortic aneurism. The lesions were located in the carotid, femoral, popliteal, tibial, peroneal, radial, ulnar, vertebral, subclavian, axillary, brachial, temporal, and digital arteries. There was one case of pulsating exophthalmos. Three of the patients died. There was one recurrence following an incomplete operation on an arteriovenous fistula. In one instance amputation of the leg was necessitated by gangrene.

There were twenty cases of true aneurism. Six vessels were involved. Those involved most frequently were the popliteal, femoral, and carotid arteries. The Wassermann test was positive in four teen cases, and the lesion was attributed to syphilis in all. The problem in these cases was to extirpate or obliterate the lesion completely and at the same time preserve a collateral circulation sufficient to nourish the part distal to it. This was done by one of three methods: (1) extirpation of the portion of the artery occupied by the aneurism; (2) obliteration by sutures placed within the opened sac (ligatus) and (3) the application of a band of fascia proximal to the aneurism to produce clotting by slowing the flow of blood. Fascial bands were used in seven cases, aneurysmorrhaphy was performed in nine cases, proximal and distal ligation and packing were done in one case, total extirpation was done in two cases, and proximal ligation was done in one case. The five cases of aneurism of the common carotid artery were treated by placing a band of fascia about 1.5 mm. wide just below the lesion and suturing it with silk. Three of the patients recovered without complications, one developed a recurrence after five months and was then treated successfully by proximal and distal ligation and one developed a transient hemiplegia.

There were twenty-four cases of false aneurism or pulsating hematomas. The most common causes were stab and gunshot wounds. The problem of treatment was for the most part like that of the spontaneous variety, i.e. closure of the arterial wound and extirpation or obliteration of the sac without interference with the collateral circulation. The sac was opened under tourniquet control, the clot evacuated, and the sac then obliterated by endo-aneurysmorrhaphy. One patient died from secondary hemorrhage.

Sixteen cases of arteriovenous fistula were treated. The carotid and femoral vessels were involved most

frequently. Except in a case of small congenital fistula of the common carotid artery and the internal jugular vein, all of the fistulae were of traumatic origin. Quadruple ligation and complete excision, the method of choice when collateral circulation is well established, was done successfully in seven of these cases and in two cases of cirrroid aneurism.

WALTER N. NADLER, M.D.

Miller, C., Dolbey, R., and Ballance, Sir C.: Aneurism of the Innominate Artery. *Lancet*, 1934,
ccxcvi, 778

The authors report a case in which an aneurism of the innominate artery was present for twenty-three years. During this time the artery was ligated and a solution of quinine urethane hydrochloride was injected into the aneurism to prevent rupture through the skin of the neck.

The patient, a male, contracted syphilis in 1883, at the age of seventeen years, while he was in Africa. Treatment of the syphilis was discontinued after three weeks. In 1911 when the patient was in Vancouver definite signs of an innominate aneurism were seen. During the next two years treatment for syphilis was again given. In 1913 he reported that he felt well except for an occasional pain in the right arm. He saw strenuous war service until 1918. The symptoms of aneurism then recurred. During 1922 and 1923 antisyphilitic treatment with rest was given, but the aneurism increased in size, causing dysphagia.

In 1925 the innominate artery was ligated at its proximal portion by kangaroo tendons. Prior to the operation Ballance designed an ivory clamp made from the tusk of an elephant to close the artery by bringing the inner surfaces together over a wide area without crushing them. It was believed that if the larger artery were occluded by a metal band the edges of the band might press unduly against the arterial wall and cause necrosis. At operation, the scar tissue surrounding the proximal portion of the innominate artery was so dense that the clamp could not be used. Therefore three strands of kangaroo tendon passed by an aneurism needle were used instead. The pulsation was not arrested, and under local anesthesia the right common carotid artery and the right axillary artery respectively were ligated. Pulsation continued, but the patient was quite comfortable. By means of electrolysis, thrombosis in a portion of the aneurism was produced. These measures reduced the size of the prominent portion.

The patient was well and comfortable and led a sedentary life until June 1933. Then, following physical exertion, the pain returned and the swelling of the aneurism re-appeared. Three months later

in anticipation of rupture through the skin, a solution of quinine urethane hydrochloride was injected into the bulging parts of the aneurism. When this was done the skin over the swelling gave way large masses of clot were extruded, and all pulsation ceased. However no hemorrhage occurred. The cavity of the aneurism was packed daily with ribbon gauze soaked in hot Beck's bismuth paste. Hemorrhage occurred suddenly and the patient died a month after the injections of quinine urethane hydrochloride.

The authors observed that there was no obliteration of the artery after its ligation. Hence Scarpa's law was not fulfilled and cure did not take place. They believe that the distal ligation was an incorrect procedure as it caused the aneurism to become a diverticulum of the larger artery and increased rather than decreased the pressure within the sac. Attention is called to the fact that aneurism of the innominate artery usually starts at the point of strain, namely the bifurcation. The proximal portion of the artery is at first unaffected and early operative interference is possible. The tumor spreads in the direction of least resistance. Although the aneurism in the case reported had been present for twenty three years, no pressure erosion of any bone was revealed at autopsy. It is noteworthy that rest and antisyphilitic treatment were most beneficial in the earlier stages of the infection by syphilis.

HENRY F. THURSTON M.D.

Fontaine, R., and Maitre, R. Arteriography In Arteritis of the Extremities (L'artériographie dans les artérites des membres) *J. de chir.* 1934 xliii 801.

Heretofore determination of the level of amputation in cases of vascular disease of an extremity was based on the following factors:

1. The clinical findings, which included the appearance of the extremity, the topography of the gangrenous lesion, and the extent of the affection as evidenced by cyanosis. These are too indefinite to be fully dependable.

2. The arterial pulse. Determination of the arterial pulse is sometimes difficult even under normal conditions. The pulse may be absent when the vessel is not obliterated. Moreover, the arterial pulse does not necessarily indicate the condition of the large arterial trunks as the latter may be obstructed without marked involvement of the vessels of the extremity.

3. The test of Mosskowitz. This is somewhat more precise. The rapidity with which the color returns following the application of a tourniquet permits judgment regarding the degree of vascularization of the extremity.

4. Oscillometry. According to various investigators, this method permits more accurate determination of the level of a contemplated amputation than any of the other factors mentioned. The oscillometer registers the oscillations of the arterial walls. The amplitude of the oscillations depends on

(a) the cardiac power, and (b) the arterial factor. Two factors determining the former are (a) the elasticity of the arterial walls, and (b) the condition of the vascular lumen. When the elasticity of the arterial walls is changed as in certain cases of senile arteritis before the occurrence of obliteration, the amplitude of the oscillations is often considerably increased without a consequent increase in the blood supply of the extremity. When the vascular lumen is obliterated, the oscillations usually cease. Oscillometry reveals exactly only the upper level of vascular obliteration and this is insufficient. The circulatory relations are entirely different when the main trunk is obliterated for a distance of only 1 or 2 cm. and when there is a more extensive thrombosis of the lower segment.

Because of the facts reviewed the authors employ arteriography. This method permits a study of the different factors which are responsible for what may be called the circulatory value of an extremity.

The method of Sicard, the intra arterial injection of lipiodol did not become very generally accepted. The technique of arteriography was considerably improved by Dos Santos, but even in the modified form it did not become generally used.

The method employed by the authors consists of a transcatheter arterial injection of thorotrast, a procedure no more complex than a simple intravenous injection. The injection is not painful and is well tolerated. It does not lead to unpleasant side-effects or to necrosis. It was employed by the authors forty-six times in the cases of thirty-eight patients. Although the objection has been raised that thorotrast becomes fixed in the parenchymatous organs the authors doubt that the injection of from 20 to 35 c.c. of thorium dioxide, the amount necessary for arteriography, can have an injurious effect.

Cases of various vascular affections are reported in detail.

The article is concluded by the statement that arteriography is the only method which makes it possible to determine clearly whether conservative or radical therapy is necessary and if radical treatment is indicated, at what level the amputation should be done. The authors cite cases in which following a diagnosis such as sciatica or chronic arthritis, arteriography showed the condition to be an arteritis and thereby led to proper treatment with cure.

A. SCHWARTZMAN M.D.

Matas, R.: On the So-Called Primary Thrombosis of the Axillary Vein Caused by Strain. *Am. J. Surg.* 1934, XLIV 643.

A case of so-called primary thrombosis of the axillary vein which presented a special medicolegal problem is reported. This condition, which was first recognized as a clinical entity by Schroetter in 1884, is discussed by the author from the standpoint of etiology, pathogenesis, prognosis, and treatment. About 100 cases have been reported. In a considerable number of cases in which operation was performed no thrombus or occlusion of the vein was

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

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The patient was well and comfortable and led a sedentary life until June 1933. Then, following physical exertion, the pain returned and the swelling of the aneurism re-appeared. Three months later

intervention suppurative arthritis of the knee resulted. The knee joint was incised and drained. The temperature was of the septic type. The general condition became progressively worse. Following the transfusion of 500 c.cm. of group-similar blood there was slight improvement of the general condition for two days. A new revision of the joint then seemed necessary. The general condition was poor. Two days later a second transfusion of 500 c.cm. of blood was given. The patient reacted very well and slowly recovered. After four months he was discharged as cured with a stiff knee.

The second case was that of an eighteen year-old girl who had had diabetes mellitus for five years and was admitted to the hospital because of a severe phlegmon of the left leg and phlegmonous abscesses of both thighs. In spite of immediate surgical intervention there was marked deterioration of the general health. This was due in part to the severe diabetes. The temperature was of the septic type. On the twelfth postoperative day diabetic coma set in and the temperature was 40 degrees C. Two days later a severe hemorrhage occurred from the wound in the left leg. Another wound revision was done. In spite of this the general condition remained so poor that the advisability of amputation was discussed with the girl's parents. Two days after the hemorrhage a transfusion of 500 c.cm. of group-similar blood was given. The patient reacted very well and slowly recovered. The wound filled in with granulations. After four months of further treatment the patient left the hospital cured.

The third case was that of a thirty-six year-old man who presented himself with a phlegmon in the gluteal region. In spite of surgical management, sepsis with gas gangrene developed. Multiple incisions were made. A transfusion of 350 c.cm. of blood was given, but death occurred two days later. The autopsy findings were gas gangrene phlegmon of the right gluteal muscles with extension to the contiguous tissues emboli, abscesses in both lungs, fibropurulent and hemorrhagic inflammatory foci in the lungs, bilateral fibrinous pleurisy acute dilatation of the heart and lacunar angina.

The fourth case was that of a man twenty five years old who sustained severe ski injuries—fracture of the left zygomatic process, concussion of the brain fracture of the pelvis, and complete dislocation of the left wrist with tendon and nerve injuries. Immediate reduction of the fractures and dislocation and aseptic treatment of the wounds were done and tetanus antitoxin was administered. After a time the wounds began to suppurate and sepsis followed. Surgical treatment and a transfusion of 500 c.cm. of group-similar blood was given. The patient was discharged cured two months later.

In conclusion the author says that these severe cases of general sepsis appear to emphasize not only that blood transfusion is justified in sepsis, but also that it is necessary in cases in which surgical measures have not given satisfactory re-

sults. However, it is not to be regarded as a panacea. Its efficacy in sepsis seems to depend particularly upon the formation of antibodies in the serum of the recipient. An increase in antibodies is shown by a considerable increase in the blood titer (2).

Kallius, Ulrich, and Mertenskoetter: The Behavior of Bactericides After Blood Transfusion in Septic Processes in Animal Experiments (Das Verhalten der Bactericide nach vitalen Bluttransfusionen bei septischen Prozessen im Tierexperiment) *Mitt. a. d. Grenzgeb. d. Med. u. Chir.* 1933 xliii 419

The question of the value of blood transfusion in cases of sepsis is answered differently by clinicians because of differences of opinion as to what constitutes sepsis and as to the type and severity of the condition. Accurate blood studies for blood grouping and accurate presentations of the clinical picture are essential. The authors discuss the effect of septic conditions on the blood-forming organs and the reticulo-endothelial system. Experiments on animals have yielded apparently decisive proof of bactericidal power of the serum, phagocytosis, and complement fixation.

The experimental animals used by the authors were rabbits. Two series of experiments were conducted one with filtrates of toxic hemolytic staphylococci and the other with injections of living staphylococci. The tests of bactericidal power were made on the typhoid bacillus. It was shown that only the injection of toxic bacterial filtrates was of value as it allowed a gradual increase of the toxicity and produced a correspondingly gradual increase in the severity of the septic picture. The mortality was 40 per cent. In the second series of experiments the pathological picture was more severe and in calculable from the start and terminated more quickly and frequently in death. The mortality was 90 per cent. The technique is described in detail and the results are shown in tables.

In order to avoid incorrect conclusions, the following additional factors were studied (1) the influence of the narcosis (2) the influence of repeated pre-operative small venepunctures to determine the bactericidal titer of the blood of the septic animals before blood transfusion (3) the influence of a single, large venepuncture just before the blood transfusion, a procedure recommended by most surgeons for clinical septic cases and (4) the compatibility of the blood of the rabbit donor and recipient.

The results showed that narcosis which increases the bactericidal power in normal animals generally decreases it in toxic or septic animals. Pernoxon or somnifen narcosis was used. According to Flannestiel Eichhoff and others, ether and chloroform narcosis in themselves increase the bactericidal power. In the authors' experiments the addition of sodium citrate solution to the donor's blood had no effect and the withdrawal of small quantities of blood had no appreciable influence. The determina-

tion of phagocytosis according to the method of Wright was of no particular value in these studies. In neither series of animals were there any appreciable changes in the complement titer after the withdrawal of small quantities of blood, large phlebotomies, or blood transfusion. In most of the animals given injections of small quantities of toxin there was a favorable bactericidal power similar to that of normal animals which lasted about forty-eight hours. In moderately ill animals the reaction appeared less quickly and disappeared more quickly. Animals which had received large quantities of toxin showed a decrease of bactericidal power and never returned to their former condition. Also in the animals injected with living bacteria, the reaction to blood transfusion depended on the severity of the sepsis. No proof could be obtained that preventive substances in the donor's blood were responsible for the favorable influence. It was always a matter of irritation by foreign proteins.

These findings may be applied to the treatment of patients. They indicate that in early cases of acute septic disease good results can be expected, but in advanced cases the results are doubtful. In the former in which the results are always only transitory, blood transfusion should be done promptly. In the latter transfusion is not only useless, but harmful.

FRANK (Z)

LYMPH GLANDS AND LYMPHATIC VESSELS

Mankin, Z. W. The Clinical Picture, Diagnosis, and Pathological Anatomy of Lymphogranulomatosis on the Basis of the Material of the Oncological Institute (Klinik, Diagnostik und pathologische Anatomie der Lymphogranulomatose auf Grund des Materials des Onkologischen Instituts) *Arch f. Klin. Chir.* 1933, *cxviii*, 744.

One hundred and three cases of lymphogranulomatosis have been observed at the Oncological Institute in Leningrad. Sixty-two of the patients were men and 41 were women. The disease is especially frequent between the ages of twenty and fifty years, but may occur in infancy and in old age. In the cases reviewed, racial and constitutional predisposition and the influence of climate could not be proved to play a part in its development. It appears most often in healthy young persons at the apex of their vigor. There is hardly a region of the body or an organ which has not been attacked by it. The clinical picture is exceedingly variable. The condition is found particularly often in the peripheral and deep lymph glands, in which it is next in frequency to tuberculous lymphadenitis. The process usually starts in a definite group of glands. In 69 per cent of the cases reviewed it began in the cervical glands. In its further development it may remain localized or may spread to other glandular structures and from there to other organs and systems of the organism. In recent years observations of primary localization of lymphogranulomatosis focus in the mesenteric and retroperitoneal glands have

been increasing. The average length of the course of lymphogranulomatosis is between two and three years. Acute cases and those in which the condition is present for many years are extremely rare. Ziegler's classification into a local, a generalized, and a lethal stage does not always correspond to the observations of clinical practice.

The multiplicity of localizations and the variety of forms are responsible for a great number of secondary manifestations. Therefore the specific symptoms may not be evident. The specific symptoms are local and general. Among the latter are changes in the blood, the nervous system, the skin, and the temperature curve. In all of the reviewed generalized cases and cases of far advanced localized processes a distinct lymphopenia and monocytosis were found. Lymphogranulomatosis is a product of irritation of the reticulo-endothelial system and characterized histologically by an abundance of reticular elements in various stages of development. Wherever lymphogranulomatosis is found, polymorphism of reticulo-endothelial cell elements is present. These elements are not completed forms, and may undergo various changes. Some of them change into monocytes of the blood and some develop into fibroblasts. The latter proliferate to such an extent that they cause compression of the lymphoid tissue and thereby produce a lymphopenia. Itching of the skin, prurigo, bronzing, eczematous eruptions of various kinds, wavy variations in the temperature curve, periodical alternation of a high temperature of irregular type with afebrile intervals, unequally firm consistency of the involved glands over which the skin is usually movable and free from fistule, a glandular involvement which does not appear simultaneously in the different gland groups but progresses gradually from one group to another and, finally, the severe clinical course with a fatal termination in from two to three years form a very pathognomonic syndrome.

The changes in the nervous system may be of a general or local character. Those of a general character are caused by anemia, malnutrition, and intoxication by the products of the disturbed intermediate metabolism. The general disturbances of the nervous system is manifested by headache, nausea, general weakness, depression, and a reluctance to work. The local nervous disturbances depend upon the local pressure caused by the tumors. The nervous tissue itself may be the site of the lymphogranulomatous process. The generalized form is particularly frequent in young persons.

Of the local forms, the author discusses particularly lymphogranulomatosis of the bones, parotid-intestinal tract, spleen, retroperitoneal glands, and mediastinum. In his material there were 7 cases of lymphogranulomatosis of bone. In 4 the condition involved the sternum, in 1 the pelvis and 1 the spinal column. The simultaneous occurrence of productive-proliferative and destructive changes, which is typical of the pathologico-anatomical picture of lymphogranulomatosis, is seen with particular clarity

in localizations of the disease in bone. Osteolytic as well as osteoplastic changes occur separately or combined. In the digestive tract, lymphogranulomatosis may be observed from the tongue to the rectum, but its most frequent site is the upper part of the small intestine. The intestine and stomach may be diseased simultaneously or the condition may be present at the same time in different parts of the intestine. The clinical picture of the intestinal form may be that of a tumorous or an ulcerous process. The ulcerous form runs a more malignant and acute course than the tumorous form and has more pronounced general symptoms. The retroperitoneal glands are considerably more rarely the site of primary lymphogranulomatosis, but their secondary involvement is frequent. Occasionally enlargement of the spleen is the most prominent sign of the condition. In 12 of the cases reviewed there was an exclusive localization of the lymphogranulomatosis. It occurred in the lungs (in 2 cases) and in the mediastinum with local manifestations.

Histologically Mankin distinguishes 3 types, the productive inflammatory the hyperplastic, and the

tumor type. Of the first type are the particularly typical classical cases which are characterized by polymorphism and pleomorphism of the cells and the presence of fibrosis. The cell forms take their origin from the bone marrow the parenchyma of the lymph nodes, and the reticulo-endothelium. They show all transition forms from ordinary reticulo-endothelial cells through large, free, chromatin rich cells to Sternberg giant cells. In the majority of cases they are a product of the transformation of reticular cells. While their origin can be traced just as clearly from the sinus endothelial cells, this form of development is of less importance than that from the reticulo-endothelium. In the second type hyperplastic changes in the reticulo-endothelium are most prominent. The typical Sternberg giant cell is developed less often and fibrosis is less marked. The third type differs from the others in its behavior toward the surrounding tissue (infiltrating and destructive growth), proliferation of only the derivatives of the reticular-cell type, systemic spread, and longer duration of the disease.

DRUEGG (Z)

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE; POSTOPERATIVE TREATMENT

O'Malley T. S.: Full Thickness Skin Grafts in Finger Amputations. *ILLINOIS M J* 1934 xxvii, 337

The author advocates the use of a free full-thickness skin graft to reduce or prevent loss of length of the fingers and consequently preserve greater function following extensive trauma. The use of such a graft is of great value in cases of extensive injury of phalanges in which amputation at a higher level with sacrifice of joints is often necessary to obtain satisfactory stumps and pads. When revision of skin over a joint proximal to a point of traumatic amputation occurs, a free full-thickness graft gives an excellent functional result because of the absence of appreciable contractures limiting motion of the involved joint. The use of such a graft is possible also in all cases of traumatic amputations of the fingers which are up to six or eight hours old and not actually or potentially infected, and in cases which have gone on to a state of clean granulation.

The following rules are stressed:

1. Cleanse the operative field with soap and water followed by ether.
2. Thoroughly remove contused soft tissues with a scalpel rather than with scissors as scissors crush the capillaries.
3. Control bleeding carefully by fine ligatures and hot packs.
4. Avoid making perforations in the graft as this lessens the chances of obtaining a complete blood supply.
5. Always use the graft to be taken accurately.
6. Use grafts from the non-hairy portions of the forearm on the same side as the injury.
7. Remove all fat and expose the papillae on the under side of the graft.
8. Use fine needles and non-absorbable interrupted sutures for approximation.
9. Maintain an even pressure by means of a rubber sponge over the grafted area.
10. Immobilize the part for five or six days.

ARTHUR S. W. TORREY, M.D.

Leser: Restoration of the Eyebrows in Extensive Scarring of the Face (*Fräns der Augenbrauen bei ausgedehnten Gesichtsverwundungen*). *Zentralbl f Chir* 1934, p. 507

The author reviews the possibilities of operation for restoration of the eyebrows in extensive scarring of the face.

If the scalp is still well covered with hair and is not scarred, the simplest method is the transplantation of bilateral scalp flaps containing the temporal

arteries in their pedicles. To avoid the danger of necrosis the material for repair must be sufficiently ample. After division of the pedicle it can be narrowed and a symmetrical position and correct size of the eyebrows can be easily obtained. With the use of the two flaps the hair on each side has an outward direction.

In cases of associated ectropion of the upper lid a free skin graft is unnecessary and, because of shrinkage on the lax base inadvisable. It is better to make an arched incision above the orbital ridge and push the liberated skin downward. In this way a sufficiently wide covering for the upper lid can be obtained. The hairy flap comes to lie in the resulting defect. If pushing down of the skin is not sufficient, a correspondingly wide strip of hairless skin should be left at the lower edge of each flap formed from the hairline for the replacement of the eyebrows.

If the scalp is extensively scarred and a creeping flap from a hairy area on one side of the back of the head must be used for both eyebrows, an outward direction of the hairs can be obtained by first attaching the tip of the flap in the middle of the forehead and then, by splitting the lower part lengthwise, separating it for the replacement of the two brows. After attachment, the pedicle can be brought down into the proper position for healing and the correct direction of the hair.

II. GROSS (Z)

Podleśchka, K.: Gynäkostatistische Beiträge zur Frage der Embolie und Thrombose. *Monatsschr f Geburt u. Gynäk* 1915, xcv, 137

The author has studied the entire gynecological material of the University Gynecological Clinic at Prague for the years from 1920 to 1931 inclusive according to the rules which Payr proposed in 1910 for the compilation of statistics. However while Payr contended that only cases of thrombosis proved by autopsy should be counted, the author included also cases which were diagnosed on a purely clinical basis. The incidence of thrombosis thus calculated was 336 cases (1.44 per cent), and that of embolism, 86 cases (0.35 per cent). The incidence of thrombosis was highest in the year 1924 whereas that of embolism was highest in the years 1926 and 1928. The incidence of both complications was lowest in the years 1927 and 1930. In the individual years the number of cases of embolism was in general comparable to the number of cases of thrombosis. The yearly curve for thrombosis and embolism proved at autopsy showed a remarkable resemblance to the annual curve for the entire material.

In the years 1920 and 1931 thrombosis and embolism occurred with approximately equal frequency. The variations in the interval between these two years may well have been due to a transitory involuntary selection of predisposed individuals (Nurnberger). Three fourths of the total number of thromboses and embolisms were postoperative. In the cases of thrombosis the annual variations calculated on the basis of the number of operations ranged from 2.69 per cent in 1927 to 5.67 per cent in 1929 and in the cases of embolism it ranged from 0.39 per cent in 1927 to 1.86 per cent in 1928. The thrombosis curve for the individual years in the cases treated conservatively (including those in which minor gynecological operations were done) took a course quite different from that of the curve for the surgically treated cases, a fact indicating that the yearly variations were determined by accidental factors.

The incidence of thrombosis in conservatively treated cases during the entire twelve years calculated on the basis of the number of cases treated was 0.51 per cent, and that of postoperative thrombosis was 4.1 per cent. The corresponding figures for embolism were 0.13 and 1.0 per cent. The ratio of embolism to thrombosis was 1.4 in both the surgically treated and the conservatively treated cases and showed little variation in the individual years. Of the 86 emboli 45 per cent had their origin in the large veins of the lower extremities, 26 per cent in the pelvic veins, and 5 per cent in the region of the ovarian veins.

Of the patients subjected to laparotomy the incidence of thrombosis and embolism was highest in those in which dissection and ligation had been done in the parametrium. Of the patients who were subjected to a vaginal operation these complications were most common in those subjected to an operation in the region of the vulva and parametrium. The author attributes the less frequent occurrence of thrombosis after vaginal operations to the difference in the indications for operation as in the cases in which laparotomy was done the condition was usually more serious from the beginning. Embolism occurred with about equal frequency after both types of operative procedure. Mentioned in order of decreasing frequency postoperative thrombosis was most common in cases of carcinoma of the vulva, malignant tumors of the corpus of the uterus, the ovary, and the cervix, and myoma of the uterus. Its frequency in cases of myoma is attributed by the author to the variable difficulty of the operation for this condition rather than to an influence of the basic disease. Embolism was also most frequent after operations for malignant tumors. In the conservatively treated cases most of the thromboses developed on a septic basis. The patient's age per se was apparently not a factor in the formation of the thrombi.

Seventy per cent of the thromboses and embolisms were diagnosed during life. The others were found at autopsy. Of the 250 which were diag-

nosed, only 3 were localized in the true pelvis, whereas of the 106 which were not diagnosed, 71 were in the true pelvis. In 4.2 per cent of the cases the typical Mahler sign was present, and in another 4.2 per cent it was suggested. Thrombosis of the extremities occurred with considerably greater frequency on the left side than on the right side. Fifty-three per cent of the embolisms were the primary cause of death, 22 per cent were followed by recovery, and 25 per cent were only an accidental finding at autopsy.

Prophylaxis was limited to the administration of cardiac stimulants. The patients were allowed to get out of bed approximately one week after operation. In the cases in which thrombosis had already occurred, movement was not permitted until four teen days after the thrombus had become localized.

Several patients who presented symptoms of thrombosis before operation were kept under observation for a month or longer until it was certain that the thrombus formation did not progress. In these cases the thrombus formation remained stationary also after the operation. In cases in which embolism had occurred no cardiac stimulants were administered.

BUTTS (G)

Potter, P. C.: The Relation of Postoperative Paralytic Ileus to Mortality in Acute Appendicitis. *Ann. Surg.* 1934, xcix, 985.

Potter studied cases of acute appendicitis, with and without peritonitis, to determine the immediate cause of death and to devise means for the prevention of complications which might have a direct bearing on the mortality. The highest mortality was found in the cases with diffuse peritonitis. In these a frequent cause of death was paralytic ileus. For the prevention of this complication Potter recommends intramuscular injections of pituitrin (pitresin). He states that the initial dose must be given in the absence of distention of the intestine. Hence when general anesthesia is employed the first dose is given at the beginning of the operation. The administration of pitresin must be continued at regular intervals throughout the hypotonic period. No cathartics or enemas are administered until the administration of pitresin has been discontinued. Following the final dose a colon irrigation is ordered.

In 112 cases of appendicitis reviewed by Potter there was no instance of paralytic ileus.

JACOB M. MOZA, M.D.

Calzolari, T.: Postoperative Hyperazotemia and Hypochloremia (Operazotemia ed ipocloremia postoperatoria). *Pedidia*, Rome, 1934, xl, sez. chi, 157.

Calzolari studied the changes in the concentration of urea and chlorides in the blood following operation. He found that they were related to the lesion for which the operation was performed and the type of surgical procedure. The concentrations

began to change at various intervals after the operation and reached their maximum at about the fifth postoperative day. In the favorable cases there was then a gradual return to normal.

The increase in the blood urea varied from 0.11 to 0.50 gm. This was always well tolerated, the patient showing no clinical symptoms of uremia. Coincident with it there was an increase in the excretion of urea in the urine, often from two to four times the normal amount. Because of the increased urea excretion, the author believes that the high blood urea is due to an exaggerated urogenesis resulting from cellular disintegration in the operative field rather than to renal dysfunction.

A decrease in the blood chlorides was a more or less constant observation. Calzolari studied the relative changes of the chlorides of the plasma and the blood cells. The changes in concentration were more constant and the variations from the normal were greater in the globulin chlorides than in the plasma chlorides. Normally the concentration of plasma chlorides is about two times that of the globulin chlorides. The determination of this ratio gives a more accurate conception of the relative dechlorination. The excretion of chlorides in the urine decreases during the early part of the post-operative period, but gradually returns to normal later.

The author reports good results from the post-operative administration of sodium chloride.

PETER A. ROSE, M.D.

ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Deicke, H.: Tendovaginal Panarititis of the Hand. Their Treatment and Ultimate Fate (Sehnenscheidenpanaritien der Hand, ihre Behandlung und ihr Spätschicksal). *Beitr. z. Klin. Chir.* 1933, *clin.* 461.

This report is based on 200 cases of tendovaginal panarititis observed clinically at the Surgical Clinic in Leipzig, which were referred by the Polyclinic or by general practitioners, most of them after the development of complications. The cases were of a serious nature. The majority were followed up to determine the functional results. In only 23.5 per cent were no injuries reported as the cause of the development of the panaritium. The most common cause was an apparently insignificant injury with very little or no bleeding. The preclinical duration of the inflammation averaged seven and a half days. Perforation into the tendon sheath was characterized in many cases by increased tenderness and a rise in the temperature and sometimes by chills. On bacteriological examination, which was carried out only in the more severe cases, streptococci were found in 71 per cent of the cases and staphylococci in only 39 per cent. The point of origin was the thumb or the radial bursa in 61 cases, the index finger in 33, the middle finger in 51, the ring finger in 19, and the little finger or the ulnar bursa in 29. One hundred

and one of the patients were males. The ratio of involvement of the right hand to involvement of the left hand was 113:87.

The diagnosis of tendovaginal panarititis is based on active stiffening of the involved finger in a slightly flexed position, frequently severe pain on attempts at passive movement, and, finally, circumscribed tenderness to pressure made along the affected tendon with a probe. Swelling, redness, and fluctuation may be absent. (Edema on the dorsal aspect of the hand may be misleading as to the site of involvement.) Frequently there is a lymphangitis. This occurred in 42 of the 200 cases reviewed. With spread of the condition to the synovial sacs or the palmar spaces there is renewed fever with marked edema of the back of the hand and extension of the tenderness elicited by pressure. Among 129 (64.5 per cent) of the phlegmons reviewed there were 40 volar phlegmons, 27 of which originated apparently from the thumb or radial bursa, 9 from the little finger or the ulnar bursa and 4 from the palmar spaces.

The later function of the finger depends to a great extent upon whether it is possible to keep the tendon intact or not. Osseous panarititis and articular panarititis have an unfavorable prognosis as regards later functional capacity. Empyema of the wrist joint is still more serious. A complication of streptococcal suppurations is secondary erysipelas. This occurred in 13 of the cases reviewed. When suppuration persists for a long time hemorrhages due to erosion and metastatic abscess formations may result with the development of a pyemic condition.

Chief among the other general diseases is diabetes. The presence of syringomyelia is of importance because on account of their analgesia to injuries of the fingers, patients with this condition become aware of such injuries only after alarming symptoms have developed.

The treatment of tendovaginal panarititis of the hand consists of bilateral lateral incision with preservation of the annular ligaments. Much depends upon early opening of the tendon sheaths. With it, careful irrigation with sodium chloride or rivanol solution may be beneficial. Suspension is hardly ever done, and splints are no longer employed. Active-motion exercises should be carried out early. Phlegmons of the palm require extensive incisions.

The total mortality in the cases reviewed was 8 per cent. This includes the deaths of 5 patients with septicopyemia. The average age of all patients was thirty-seven years; that of patients with panarititis, thirty-one and six tenths years; that of patients with phlegmons, forty years; and that of patients who died, fifty-eight and six tenths years. Therefore the prognosis becomes more grave with advancing age.

Of the phlegmons, 20.9 per cent healed well, 13.9 per cent healed moderately well, and 65.0 per cent healed poorly. The mortality due to phlegmons was 11.6 per cent. The results were considerably better

In cases of simple tendovaginal paronychia, of which there were 71. Of these, ultimate function was good in 46.5 per cent, less satisfactory in 29.6 per cent and fair in 23.9 per cent. In the cases with the better results the after treatment was continued correspondingly longer. The co-operation of the patient is of great importance for a good result. In the majority of the cases reviewed by the author compensation of from 10 to 20 per cent and in the cases of more severe injuries—those of phlegmon—compensation of from 40 to 60 per cent was awarded.

Booz (Z)

Brattström, E.: Some Results of Vaccine Therapy in Acute Pyogenic Infections (Quelques résultats de la vaccinothérapie dans les infections pyogènes aiguës) *Acta chirurg Scand* 1934, lxxiv 196

Of seven cases of puerperal infection and six of acute pyogenic infection due to a cause other than obstetrical infection non-specific vaccine therapy was followed by cure in nine and death in four. The results were best in the cases of puerperal infection. The vaccine used was a colon bacillus vaccine. The effect of autogenous vaccines is also to be included with non-specific therapy the action of which is still obscure. The method used by the author is described in detail. Attention is called to the superiority of intravenous injections over intramuscular and subcutaneous injections.

ANÆSTHESIA

Downs, T. McK. The Carotid Sinus as an Etiological Factor in Sudden Anæsthetic Death. *Ann Surg.*, 1934, xclx, 974.

Downs discusses the occurrence of sudden respiratory failure in nitrous oxide-oxygen anæsthesia. Bearing in mind the rôle played by the carotid sinus in the regulation of blood pressure and the effect on respiration of afferent impulses coming from that organ he carried out experiments in which he caused sudden arrest of respiration by stimulating the carotid sinuses in various ways. On the basis of his findings he concludes that in nitrous oxide-oxygen anæsthesia pressure on the carotid sinus must be scrupulously avoided. He states that in holding the gas mask tightly to the face the anæsthetist makes considerable pressure and to hold the angle of the jaw forward he often hooks his fingers on the angle of the jaw. Just behind the angle is the dangerous point. Downs believes that pressure of this kind may be a factor in the sudden arrest of respiration.

Since it has been shown that ether diminishes the sensitivity of the sinus, the addition of ether to the gases not only stimulates respiration but decreases the effect of pressure produced accidentally. In case of respiratory failure, mechanical artificial respiration offers the best promise of a successful outcome. Drugs are useless.

JACOB M. MORA, M.D.

PHYSICO-CHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Meldolesi, G., and Court, L.: Thorium Oxide as a Contrast Medium for Study of the Lymphatics in Roentgen Diagnosis (*L'ossido di torio come mezzo di contrasto in radiodiagnostica per lo studio delle linfatiche*) *Radiol. med.* 1934 xxi, 522

The authors report studies of the effects on rabbits and dogs of injections of 25 per cent colloidal thorium oxide which were made to obtain information regarding the distribution of the lymphatics, the retention and elimination of the medium, and the histological changes it produced in normal organs. The dosage was proportional to the weight of the animal.

They found that thorium introduced into the splanchnic cavity or into the superficial tissues by either subcutaneous or intramuscular injection is eliminated by the lymphatics, rendering the latter opaque and causing histological changes. By such injections it is possible in experimental animals, to demonstrate the lymphatic connections between the abdominal and thoracic cavities and between these cavities and the tributary lymphatics. Some of the lymphatics are rendered visible more easily than others, probably because of differences in their permeability and the direction and rapidity of their currents. The findings also showed clearly the possibility of the passage of opaque substances from the abdominal to the thoracic cavity to the retrosternal and cervical lymphatics. The authors believe that Ruggen and Zanetti failed to observe this passage because their animals were not under observation for a sufficiently long time.

Following intraperitoneal injections of the thorium the authors were able to demonstrate the outlines of various abdominal organs. However because of the severity of the reaction produced in the peritoneal sac they are unwilling as yet to recommend the application of the method to man. They noted also that thorium may accumulate in appreciable quantities in the pelvis.

In their investigations of the effect of injections into the pleural cavity they were unable completely to confirm the observations of Capres. In dogs they demonstrated the passage of the thorium from one pleura to the other. They were able also to obtain images of the pericardium, doubtless because of the lymphatics present in this structure. However they state that in dogs there is sometimes a communication between the pleural cavities, and therefore the passage of thorium from the pleural to the peritoneal cavity is uncertain or at least much less definite than its passage in the reverse direction.

They observed also the passage of thorium into the peribronchial lymphatics, as did Ruggen and

Zanetti but they noted it much less frequently (only two or three times) and only after injection into the parenchyma of the lung. Following injection into the pleural cavity they observed almost constant invasion of the retrosternal lymphatics. The latter can be differentiated from the peribronchial lymphatics only by roentgenographic study in the lateral view.

The authors' histological findings confirmed in general those previously reported. They demonstrated that in passing through the lymphatics the thorium does not go along in the current but is encapsulated. They showed the formation of special cells (thorium cells) which are collected in the serosa, lymphatics, and lymph nodes, and in organs containing many reticulo-endothelial elements. They revealed also the occurrence of phagocytosis in the mesenchymal cells and the cells of the serosa, which was observed by Ruggen and Zanetti. In rabbits, thorium injected into the various splanchnic cavities produced severe histological changes, even when the doses were small. In dogs, the histological changes were less marked. EUGENE T. LAMOT, M.D.

Bell, J. C.: The Roentgen Ray as an Aid in the Diagnosis of Disease of the Nasal Accessory Sinuses. *Radiology* 1934, xxii, 521

The author discusses roentgen examination in the diagnosis of disease of the nasal accessory sinuses from the standpoint of technique and interpretation. He routinely uses the frontal, Granger lateral, axial, and stereoscopic Waters positions. He describes these positions with the aid of illustrations and presents roentgenograms showing the findings. He calls attention to the changes each group of sinuses may show normally and in various disease conditions. He believes that the use of opaque media is of most value in antral examinations and offers mainly confirmatory evidence of disease which is usually apparent in the plain film. He emphasizes the need for careful technique and detailed study to obtain the full advantages of this method of examination. The article contains numerous roentgenograms showing the findings in various types of disease conditions.

ANDREW HARTMAN, M.D.

Kadrinka, S., and Naz, E.: The Results of Roentgen Diagnosis of the Stomach by the Method of Outlining the Internal Relief (*Résultats obtenus du radio-diagnostic de l'estomac par la méthode de mouler le relief interne*) *J. de chir.*, 1934, xxi, 834

The method discussed, which was developed on the basis of the work of Forreil and Berg, consists in covering the gastric mucosa with a thin layer of

contrast medium to render visible the internal relief of the stomach. While its clinical application is difficult, it offers greater possibilities than the classical method of study. It has been employed by the authors over a period of more than five years. To determine its value, the findings were checked in each case with the findings obtained by the classical method and, when possible by those obtained at operation. The studies were carried out in cases of gastric ulcer and benign and malignant gastric tumors.

The findings and conclusions are summarized as follows:

1. In cases of gastric affections, roentgen study of the internal relief of the stomach supplements the classical method of examination.

2. Benign forms of gastritis are accompanied by distinct and characteristic macroscopic changes in the relief of the gastric mucosa. This is true in hyperplastic gastritis as well as in the less common nodular hyperplastic forms with pseudo-polyp formations. In the ordinary forms of gastritis the changes in the relief, which depend on the mucous layer, are less distinct and in some cases may escape detection. Variations in the direction, caliber, amplitude, and sinuosity of the folds and the distance between neighboring folds are manifestations of gastritis, but do not necessarily represent a special histopathological form. In some cases it is difficult to determine whether a hyperplastic appearance of the folds is due to an inflammatory congestion or to abnormal turgescence of the mucosa. Frequently there is observed a spotted surface which is due to a hypersecretion of mucus creating a faulty surface.

3. An ulcer of the surface and a peptic ulcer below a gastro-entero-anastomosis may present the same appearance as in the classical method of study. The crater of the ulcers appears as a round pouch with well-defined borders surrounded by a negative transparent lunar or semilunar region suggesting a cockade.

4. The mucous folds converge toward the crater in the shape of a star. At times they are deviated below the level of the ulcer. More rarely they are elevated above the ulcer.

5. The deviation of the folds produces a slight invagination of the borders of the ulcer which is not demonstrable by the classical method.

6. The characteristic changes of gastritis accompanying an ulcer are commonly observed.

7. The method is of value for the study of certain tumors which are not revealed by the classical method—tumors in the initial stage of their macroscopic development, exuberant tumors, the endogastric form of sarcoma, benign tumors, and lateral carcinomas.

8. In cases of lesions which, because of their size or position, cannot be visualized by the classical method the appearance of the internal gastric relief yields important information regarding the surface and depth extension of the lesions and their relation to neighboring structures. A SCHWARTZMAN, M.D.

Bistolfi S.: More Complete Roentgen Demonstration of the Duodenal Bulb by Means of an Opaque Evening Meal for Control (Per una più completa dimostrabilità radiologica del bulbo duodenale il pasto opaco serale di controllo). *Radiol. med.* 1934, xxi, 495.

The procedure described was first suggested to Bistolfi by Maragliano who noted that when a fluoroscopic examination of the stomach was made in the afternoon at about 4 or 5 o'clock, at the termination of a normal gastric digestion period visibility of the duodenum and good filling of the bulb were obtained more easily and frequently than when the examination was made in the morning. In this article Bistolfi reports a comparison of the findings of morning and afternoon fluoroscopic examinations in the cases of 40 normal persons and 397 persons with pathological conditions.

In the cases of 2 normal persons the second examination showed no difference. In those of 3 it showed better filling of the bulb but no difference in the tonus or emptying time of the stomach. In the cases of 24 it showed better filling of the bulb with marked hypotonia of the bulb and stomach which prolonged the emptying time by from one half to one hour. The best results were obtained with the patient in the dorsoventral or right semilateral position.

In 2 cases of carcinoma of the esophagus and in 19 of carcinoma of the stomach no difference was apparent in the findings of the 2 examinations. Of 23 cases of peptic ulcer of the stomach in which the diagnosis was verified by operation, the majority showed no difference, but in a few the second examination was slightly more satisfactory. The findings of the 2 examinations were about the same also in the majority of 113 cases of ulcer of the duodenal bulb, but in 30 cases the second examination showed definitely better filling of the bulb and more accurate localization and delimitation of the process. The second examination was more satisfactory also in the remaining cases which represented extra gastric lesions.

The author discusses the advantages and disadvantages of the procedure. A LOUIS ROSE, M.D.

Pohle, E. A. and Ritchie, G.: Histological Studies of the Liver, Spleen and Bone Marrow in Rabbits Following the Intravenous Injection of Thorium Dioxide. *Am. J. Roentgenol.* 1934, xxi, 512.

The authors report experiments in which thorium dioxide (thorotrast) was injected undiluted into the ear veins of rabbits. The dose varied from 0.25 to 1 c.c.m. per kilogram of body weight. Over 80 rabbits were used. Ten of them died within ten hours after the injection. 4 lived two days, and 1 lived thirty-seven days. Six rabbits were given 5 c.c.m. per kilogram and tolerated it well. In experiments on 15 dogs 10 c.c.m. per kilogram, or 20 times the dose required for satisfactory roentgenograms, were given. These resulted in most remark-

able visualization of the entire circulatory system *in vivo*

The roentgen and histological findings are reported in detail with roentgenograms and photomicrographs of the liver, spleen, and bone marrow

Visualization of the liver and spleen of the rabbit in a roentgenogram was obtained after the intravenous injection of from 0.5 to 1 cc. of thorotrast per kilogram of body weight. This amount was tolerated without evidence of immediate injury

The radiosensitivity was manifested from fifteen to forty five minutes after the injection. In the spleen it persisted without noticeable reduction in density for as long as four hundred and ninety three days, the longest period of observation in the experiments. The authors state that as serial roentgenograms demonstrated that the shape and position of the spleen undergo many variations, any changes in the size of the spleen under the influence of an artificial stimulus should be interpreted with care

The thorotrast was seen in the reticulo-endothelial cells of the liver, spleen, and bone marrow and was scattered in fine granules throughout the liver cells. The early changes in the liver were hydropic degeneration, edema of the portal spaces and dilatation of the perportal lymphatics. Later recovery from the hydropic degeneration usually occurred and there was a slight but definite increase in connective tissue. In the spleen, an early change simulating acute splenic tumor occurred and in the majority of cases was followed later by slight fibrosis. In the bone marrow there was early hyperplasia which was eventually followed by exhaustion manifested by partial disappearance of the blood-forming centers and serious atrophy of the fat

In conclusion the authors recommend restriction of the intravenous injection of thorotrast for diagnostic purposes to the cases of incurable patients until evidence based on studies in clinical cases has demonstrated without doubt that the changes they observed in animals are not significant

CARL R. STENGER, M.D.

Leucutia, T. and Corrigan, K. E. The Present Status of Roentgen Therapy with Voltages Above 200 Kv. *Am J Roentgenol* 1934, xvii 623

The purpose of this article is to consider the various types of high voltage outfits above a peak of 200 kv from the engineering standpoint and to discuss their medical value on the basis of physical, biological, and clinical observations

The authors first describe at considerable length the different types of emitting source or tube designs, including sealed vacuum tubes and open tubes operating with a pump. They then discuss the energizing source or high-voltage plant construction. They state that in the main the generators serving for the energization of the sealed vacuum roentgen tubes up to 400 kv are built on the same principles as those used for tubes of 300 kv. Those used in connection with tubes running on continuous pumping necessitate some innovations of construction. The

three main types of high-tension generators described are the induction coil, the alternating current cascaded transformer, and the direct constant potential cascaded transformer. Consideration is given also to several other types of sources which already are, or promise to be, applicable in this field. In addition to the heavier lead protection which is necessary both around the tube and in the walls of the treatment room, special architectural problems arise where a pumping system is used

With regard to medical application, the therapeutic effect of roentgen rays above 300 kv is analyzed from the standpoints of (1) their physical state at the point of action (2) the biological reactions of the tissues and (3) the clinical response of the lesion. In all instances the governing factors remain (1) the quality (2) the quantity and (3) the energy or amount absorbed

Quality determinations require spectrometry absorption measurements, and voltage measurements. These are discussed in detail in relation to 200 kv and higher voltages. Quantity determinations are based on ionization measurements. As with lower voltages, the r unit serves as a basis. Energy absorption problems include determination of the percentage depth dose and estimation of the surface back-scattering. Both of these are discussed at some length

With regard to the biological effects of higher voltage roentgen rays the authors state that if a differentiation is made between the "selective" and "differential" biological effect as explained by them, the higher voltages produce little or no change in connection with selectivity but a proportionately greater biological effect with decreasing wave length. Biological doses are calculated from the reaction of the skin as indicated by an erythema or the reaction of the tissues around an irradiated tumor as, for example, in the mucosa of cavities or organs adjacent to irradiated areas. The skin erythema seems to present some difference of appearance at the higher voltages and requires increasing r units for its production as the voltage is raised

Advantages of the higher voltages in connection with clinical application seem to be indicated by (1) the increase of the differential action, (2) the increase of the total energy which can be delivered to obtain an erythema, and (3) the increase of the depth dose with increasing voltages. Because of these differences the clinical responses and immediate results in the treatment of malignant tumors will be improved as a larger amount of irradiation may be administered to deep tumors with less injury to the skin and overlying tissues and more uniform irradiation of the tumor as a whole. Cross-firing is markedly simplified, a smaller number of portals being necessary to produce the desired effect. However even with the improvement in results, super high voltage therapy does not promise to solve the cancer problem as a whole. While recalcitrant tumors may show some degree of improvement in their response, most of them will remain intractable

According to the procedure proposed by the authors for the prescribing of irradiation in a given case the quality of the irradiation is expressed in equivalent volts read from the curve of a prepared chart which is included in the article after determination, under the precautions indicated, of the half value layer in water or aluminum with the tube operated at the desired voltage and the filter in place. The dose is prescribed in terms of a skin erythema or skin unit dose, the number of roentgens necessary to produce that erythema at any particular equivalent voltage being read from the curve of another chart, which is also included in the article. The total amount of irradiation which must be given to a tumor or lesion is then determined—in percentage of a skin unit dose—by the usual cross-firing procedures, by taking into consideration the range of the equivalent voltage used, the depth dose at the level of the tumor and the amount of back-scattering on the surface of the skin with fields of various sizes. If mixed irradiation is used, which the authors believe to be of decided advantage, the individual dose for each type of irradiation is calculated separately in percentage of a skin unit dose for that particular equivalent voltage and the individual fractions are added to make up the total dose. Precise values for every particular instance must be determined on the basis of clinical findings from personal observation.

ADOLPH HARTUNG M D

Christensen, L. O.: Clinical Roentgen Ray Effects from the Standpoint of Their Influence upon the Germ Cells (*Klinische Roentgenwirkung vom Standpunkt der Keimzellenbeeinflussung*). *Hosp Tid* 1933 p 1137

This is a detailed review of the problem of injury of embryonal and germ cells by roentgen and radium rays based on 120 reports collected from the world literature. Investigations carried out on plants, insects and mammals are critically examined. The author discusses also the differences of opinion which have arisen between students of heredity and general practitioners, especially the gynecologists, and the opinions expressed especially at the session of the Bavarian Society of Obstetrics and Gynecology held in September, 1931. In this connection he states that it is not difficult to recognize the fact that, to a certain degree, both groups are correct. It is evident that the results of the effect of roentgen and radium irradiation on the germ cells demand the greatest caution on the part of clinicians. Whether, on the other hand, the students of heredity had the right to lay down rules for the clinical use of the roentgen rays is another matter. For the solution of these problems investigations have been carried out in all quarters.

The problem of damage to human germ cells still lacks the necessary fundamentals. Clinico-statistical material is still insufficient for positive conclusions and can furnish no information regarding recessive mutations. Moreover this material should not be increased as experiments on man are not justified.

The exact experimental irradiation genetics based on experiments on plants and the lower animals has fulfilled its purpose. From the clinical standpoint nothing more of importance can be expected from this source. The question is only To what degree can the findings be applied to conditions in man? The one possibility for the solution of the problem lies in experiments on mammals. Previous publications on experiments on mammalian animals with regard to mutation are of very limited value. According to the estimate of Hertwig, proof of a mutation of 1 per cent requires 50,000 animals up to the third generation. Moreover the spontaneous mutations of the particular species of animal must be known.

In his first investigations of the offspring of roentgen-rayed white mice the author found a very characteristic and frequent retinal anomaly—absence of the neuro-epithelial layer which reduced the thickness of the retina by half. This abnormality among others was described also by Keeler. Heredity is regularly recessive. Of 264 animals of 4 different Danish mouse breeders, the author found a manifest abnormality in 50 (19 per cent).

SVENNER (G)

Attili S.: Roentgen Therapy of Tuberculous Laryngitis and Chronic Tonsillitis (*La roentgenoterapia delle laringiti tubercolari e delle tonsilliti croniche*). *Radiol med.*, 1934, xii 224

Attili reports briefly thirteen cases of tuberculous laryngitis and five cases of chronic tonsillitis which were treated by roentgen irradiation with excellent results. Some of the disturbances due to the tuberculous laryngitis, particularly the dysphagia and dysphonia subsided almost immediately. In all cases the laryngeal lesions showed a regression, and in four they disappeared completely. In two cases the general condition grew worse because of advance of the pulmonary disease. The author believes that all forms of tuberculous laryngitis can be benefited by roentgen treatment although the prognosis is not equally good in every type. The results are most satisfactory in cases of the parenchymatous syndrome with infiltration limited to the true or false cords and the posterior third of the larynx. Improvement is less in cases of the diffuse edematous form, and least in cases with extensive ulceration. The few laryngologists who have tried roentgen therapy for tuberculous laryngitis agree that it is the best form of treatment available today.

The use of roentgen irradiation for chronic tonsillitis is of more recent origin and less widely recognized. All of Attili's cases were complicated by renal changes manifested by the appearance of albumin and casts in the urine. The treatment was directed toward all of Waldeyer's ring. The effect on both the tonsillar and the renal condition was immediate and permanent. Especially in the cases of children, irradiation is the method of choice.

A number of references to recent Italian, French, and German reports are given. M. E. MOORE M D

Bloodgood, J. C.: Further Experience as to the Value of Pre-Operative Irradiation with X Rays or Radium and with Pre- and Post-Operative Irradiation While Submitting the Specimens to a Number of Experienced Surgical Pathologists. *Radiology* 1934, vol. 631

Pre-operative and prebiopsy irradiation in cancer of the breast have been widely accepted, but the author believes that postoperative and postbiopsy irradiation should be the exception rather than the rule. Keyner's method of treating inoperable cancer of the breast by interstitial radium-salt needles was observed by him in 1931. He concludes that without doubt a number of the patients so treated are clinically well and free from recurrence today at the end of two or three years.

For the use of the X rays and radium as a pre-operative and prebiopsy measure, Bloodgood has established certain definite rules. He gives all recurrent tumors a thorough course of irradiation in some form. He is convinced that irradiation treatment should be considered for all recurrent small skin cancers, especially those of the face. He cites an instance in which, nine years previously a lesion about the size of a ten cent piece, which was diagnosed as a primary basal-cell cancer, was excised with a sufficient margin, but after eight years an ulcer formed which did not yield to simpler measures. He recommends that irradiation be given first instead of operative treatment. As his experience indicates that the chances of permanent cure are better when irradiation is employed, he recommends the use of irradiation for all recurrent tumors.

Bloodgood cites also a case of adamantine carcinoma of the body of the jaw in which a second recurrence was treated by irradiation with complete disappearance of the tumor and cessation of the symptoms. In this case almost twenty years had elapsed since the first tumor was curried. Thorough treatment according to the Coutard technique was followed by immediate relief of the pain and tenderness and disappearance of the tumor in two months. A second course of treatment was then given. In a few cases, however Bloodgood has obtained a permanent cure of recurrent adamantine carcinoma by operation alone. He hopes to present further evidence of the value of irradiation as the first treatment for recurrence of any type of tumor before further operative treatment is attempted.

Bloodgood attempts irradiation first also in certain cases of operable tumors in which complete removal of the neoplasm will cause unusual mutilation, such as cancer of the lower end of the rectum involving the sphincter. He cites a case treated by repeated local irradiation in which the rectum was normal two months after the first treatment.

In the treatment of cancer of the uterine cervix irradiation was first tried in inoperable cases. Later it was attempted in apparently operable cases. Today, the majority of authorities agree that irradiation with radium and the deep X rays is the treatment of choice for all types of cancer of the cervix.

The author emphasizes the value of pre-operative and prebiopsy irradiation in all cases of bone tumor including tumors of the jaw.

With regard to cancer *en cuirasse* of the breast, he states that patients with an inoperable tumor of this type are more comfortable if left alone than if subjected to operation followed by irradiation. In a case of extensive cancer *en cuirasse* which he treated by irradiation marked improvement in the local condition was found three and a half years later. In an operable case which was treated by irradiation the edema and palpable axillary nodes disappeared. Several weeks later pain in the cervical and thoracic vertebrae led to X-ray examination which revealed metastases. This discomfort was entirely relieved by irradiation. The author believes that in both of these cases the patient was rendered much more comfortable by irradiation than she would have been by a complete operation with postoperative irradiation.

When an exploratory excision of the breast shows cancer belonging to Group 4, cauterization should be done, the wound closed with drainage, and the whole area then subjected at once to deep X-ray therapy, irradiation with the 4-gm. pack, or some type of interstitial irradiation. It is safer not to perform the complete operation in cancer *en cuirasse*.

It seems to be generally agreed that inoperable cancers of the breast should be subjected to irradiation first. One of the author's patients who was treated by the implantation of radon seeds by the method of Keynes and the external application of radium emanation followed three months later by excision of the breast and the grafting of skin was apparently in excellent health two years later.

Bloodgood believes that, in operable cases of cancer of the breast, the majority of surgeons prefer to perform the complete operation without delay or within a few days after a short pre-operative irradiation which, in his opinion, is incomplete. In Bloodgood's clinic the majority of clinical cancers of the breast which are definitely operable and clinically favorable are treated by immediate operation. Those clinically unfavorable are irradiated first.

Clinically doubtful tumors of the breast seem to be increasing in frequency. In cases of this type Bloodgood performs an exploration and removes tissue for frozen section. He states that the majority of microscopically doubtful tumors exposed by surgeons and surgical pathologists of average ability will ultimately prove to be benign. There is little or no risk in excising such tumors and, after waiting for the wound to heal, subjecting the breast to irradiation. During the period of healing of the wound, sections should be submitted to a number of pathologists. If the pathologists disagree in their diagnosis, the chances are that the tumor is benign and nothing need be done. If they agree that the tumor is malignant, the majority of surgeons will prefer to follow the pre-operative irradiation by the complete operation. There is a difference of opinion as to the length of time the operation may be delayed. The

author favors completing the first course of irradiation and delaying the operation for two or three weeks to allow the effects of the irradiation to subside. When the surgeon and the pathologist are of the opinion that the tumor is malignant, the majority of surgeons believe that the complete operation should be done at once. Bloodgood is gathering evidence to show that nothing is lost and something may be gained by simple removal of the tumor followed by irradiation of the same type and for the same length of time as that given for a clinically malignant tumor. Radiotherapists disagree regarding the period of time that should be allowed to elapse between excision of the tumor and irradiation. The author favors immediate irradiation when the sections show definite malignancy.

In conclusion Bloodgood states that the problem of irradiation of inoperable malignant tumors of the breast is unsettled. He emphasizes that when a breast tumor is clinically benign and at operation is found microscopically doubtful it should be excised with a wide margin of healthy tissue, the wound should then be closed, and immediate irradiation should be given. The irradiation should be continued on the supposition that the tumor is malignant. If ultimately the pathologists agree that it is benign, nothing more need be done. If the tumor is considered malignant, it is the responsibility of the surgeon to choose between further irradiation and the complete operation. Bloodgood is inclined to the view that ultimately irradiation will be chosen.

A. JAMES LARSEN, M.D.

Suglura, K.: Reaction of Transplantable Mouse Sarcoma No. 180 to Radiations of Different Wave Lengths (200 Kv. Roentgen Rays and Gamma Rays). *Am. J. Roentgenol.* 1934, xxxi 614.

The investigation reported in this article was planned to determine the relative effectiveness of 200 kv. roentgen rays and gamma rays as lethal agents for transplantable mammalian tumors. Mouse sarcoma No. 180 was selected on account of its regularity and high percentage of successful takes. Subcutaneous inoculations of tumor fragments into healthy young adult white mice were done by the trocar method and the tumors were generally allowed to grow for a period of six weeks. Each series of experiments included the inoculation of animals with untreated tumor tissue immediately after its removal from the tumor bearing animal.

Since it was essential to know the relation of the tumor tissue to physical and chemical environments which might have a bearing on the investigation various preliminary experiments which are described in detail, were carried out to determine the effect of multiple implantation and of dedecation upon the growth of mouse sarcoma No. 180 and the influence of hydrogen-ion concentration on the viability of the tumor.

As a preliminary to the study of the action of the roentgen rays, the extent of the injurious action of unfiltered rays on the proliferating capacity of sar-

coma cells *in vitro* was determined. The findings are presented in tabular form, as are those of similar experiments with filtered irradiation. The technique used is described at length. The gamma rays used for the comparative study were obtained from 4 gm. of radium element and were highly filtered. The results obtained with them are also tabulated. The two sets of experiments were as nearly identical as possible, and whenever possible the tumor material used in both was taken from the same animal. The influence of the time factor in irradiation was also studied.

The results of the comparative study are summarized as follows:

1 The viability of the mouse sarcoma was completely destroyed by exposure for ten minutes to unfiltered roentgen rays, a dose of about 2,400 r.

2 The viability of the mouse sarcoma was totally inhibited by exposure for sixty three minutes to the filtered roentgen rays, a dose of about 2,800 r.

3 The viability of the mouse sarcoma was completely destroyed by exposure for seven hours to the gamma rays.

4 In all three instances, about three-fourths of the tumors which survived the roentgen and gamma irradiations grew at a rate much below the normal rate when the tumor fragments received a dose greater than about 60 per cent of the full lethal dose. In some cases the retardation of tumor growth continued for several weeks and subsequently the tumor underwent complete regression. In others, the retardation lasted for only from two to three weeks and thereafter growth was normal.

5 The Bunsen-Roscoe law is applicable within the limits investigated for the roentgen irradiations of the tumor tissues. ADOLPH HARTUNG, M.D.

McGregor, L.: Reactions to Radiation in Lymph Nodes Containing Carcinoma Metastases of the Squamous-Cell Type. *Acta radiol.* 1934, xv 129.

The histological changes found in forty-one irradiated cancerous lymph nodes were found also in some of the non-irradiated cancerous nodes examined but in the latter were less marked.

Although two-thirds of the irradiated nodes showed degenerative and proliferative lesions in the small arteries, these changes did not seem to precede and did not parallel the extent of the cancer necrosis or the amount of irradiation and cannot be considered as more than contributory to the death of the cancer.

The cancer was apparently destroyed in eleven of the irradiated nodes.

At the time of the resection of these nodes the lymphatic tissue seemed to be uninjured by the roentgen and radium treatment and it was quite impossible to determine histologically whether the non-cancerous nodes had been irradiated.

No histological differences were observed in the reaction of the blood vessels, cancer cells, or lymphatic tissue to roentgen or radium treatment.

Leucutia T., and Corrigan, K. E.: The Problems of Protection and Their Solution in Short Wave Roentgen Therapy. *Radiology* 1934, xvi, 330

New problems of protection have arisen with the advent of shorter wave length therapy. The authors, using roentgen-ray apparatus capable of operating at 700 kv. constant, have made an experimental study of protective measures against irradiation emitted from such powerful equipment.

Since the American and international recommendations do not adequately cover the problem of protection when a kilovoltage above 600 is used, it is proposed that the solution of these problems be incorporated in the already existing recommendations. The protective measures suggested by the authors include protection from direct, scattered, and stray rays, general protection, and electrical protection. The problem of direct roentgen-ray protection resolves itself into one of tube design and treatment-cell construction with built-in ray emission ends of the roentgen tube. It appears safest to house the entire equipment in a separate building so constructed that the control room, thoroughly ventilated, is removed from the roentgen tube as far as possible. The working hours of the personnel should be adequately regulated.

The authors conclude that under present technical conditions the installation of very high-voltage roentgen-ray equipment will probably remain limited to large institutions. E. E. BARKS, M.D.

MISCELLANEOUS

Overgaard, K.: The Treatment of Malignant Tumors with Heat (Ueber Wärmetherapie bösartiger Tumoren). *Acta radiol.* 1934, xv, 89

The investigations reported indicate that it is possible to obtain complete healing of a Wood sarcoma inoculated into mice by treatment with a relatively small amount of heat. The fact that the tumor was considerably more injured than the neighboring normal tissue demonstrated that this treatment has a selective action upon, and is lethal for tumor tissue.

In contrast to normal tissue, tumor tissue treated by diathermy shows a characteristic reaction in the form of hyperemia and destruction of tumor cells.

The findings of previous investigations in this field were on the whole confirmed. It appears possible to obtain complete cure of a tumor by the use of considerably less heat than has been employed heretofore.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Benl V. A Contribution to Our Knowledge of Congenital Cutaneous Lacunae (Contributo alla conoscenza della lacune cutanee congenite) *Arch. di sciel e ginec.* 1934, xli, 310.

Newborn infants occasionally show tissue defects in various parts of the body especially the head and particularly the vertex which could not have been produced by an accident during delivery. These defects vary from $\frac{1}{2}$ to 3 cm. or more in diameter. As a rule they are circular. They usually involve only the skin but in some cases extend to the bone. Their surface varies in appearance. It may resemble a thin brownish membrane or suggest granulation tissue. None of the theories as to their causation and pathogenesis is applicable to all cases.

Benl reports a case recently observed in the Obstetrical Clinic of Pisa. The infant was born after a normal labor and except for the lesion described was normal in every way. The lesion was an oval defect in the scalp about 1 cm. in diameter which was surrounded by a hairless zone and extended to the periosteum of the skull. It showed no evidence of a traumatic origin and did not seem to be inflammatory. The Wassermann reaction was negative. The lesion healed in four weeks without special attention or treatment. Benl reviews briefly the various possibilities which might have produced it. He is inclined to attribute it to the action of amniotic adhesions on a tissue slightly depleted by vasomotor changes in the capillary system.

EDUARDO T. LEROY, M.D.

Willard DeF. P., and Nicholson J. T.: The Klippel Feil Syndrome. *Ann. Surg.* 1934, xvi, 561.

The Klippel Feil syndrome was first described by Klippel and Feil in 1912. It is characterized by (1) limitation of the movement of the head, (2) a low margin of head hair, and (3) absence of the neck.

In 1919 Feil expressed the belief that a high spina bifida is the original lesion and that pressure and trauma later in fetal life are responsible for the fusion and malformation. He recognized three types: (1) complete absence of a cervical spine, (2) partial numerical reduction of the cervical vertebrae, and (3) associated partial reduction throughout the spine.

The authors report two cases, both of which be longed in the second group of Feil's classification. In the first case there was a numerical reduction of the vertebrae due to fusion.

In none of the sixty cases reported in the literature was there a history of familial malformation.

The syndrome has occurred with about equal frequency in both sexes.

The malformation is apparently determined before the third month of fetal life. The posterior spina bifida is caused by later fusion of the posterior chondrification centers for the vertebral bodies or by lack of fusion of the chondrification centers for the laminae. Because of faults in the chondrification centers of the laminae fusion of adjacent spinous processes occurs. The apparent or actual reduction of the cervical vertebrae is brought about by faulty or complete fusion of the body chondrification centers in the formation of the continuous mass of pericardial cartilage with the occiput. An extension of this abnormal fusion probably accounts for the changes which may appear in the upper thoracic region.

Additional variations occurring in the reported cases of Klippel Feil syndrome included: (1) fusion of atlas to the occiput, (2) fusion of the first three vertebral bodies with fusion of the spines of the third, fourth and fifth cervical vertebrae, (3) fusion of the first and second cervical vertebrae with an intact third vertebra and fusion of the fourth, fifth and sixth cervical vertebrae, (4) fusion of the third, fourth, fifth and sixth cervical bodies and of the sixth and seventh cervical and the first and second thoracic spinous processes, (5) reduction of the cervical vertebrae to four, (6) fusion of all cervical vertebrae in one mass with four cervical ribs and reduction of the thoracic vertebrae to eight, (7) a posterior spina bifida occulta which in some cases extended from the occiput to the thorax, (8) fusion of the six upper thoracic vertebrae, (9) fusion of first and second right ribs and of two ribs arising from the fourth left thoracic vertebra, (10) fusion of the fifth lumbar vertebra and the sacrum, (11) dorsal spina bifida occulta and sacra rachischisis, and (12) oblique bodies of cervical thoracic vertebrae with a hemi-vertebra and unfused laminae.

The physical characteristics are apparent absence or shortness of neck, a low hair line on the back of the neck, a nuchal depression, flaring trapezi, a high position of the shoulders, prominence of the occiput, a dorsal kyphosis, high scapulae, proximity of the chin to the sternum, a low nipple line, limitation of head movement and absence of pain.

Associated variations include torticollis, asymmetry of the face, scoliosis, Sprengle's deformity, absence of the external auditory meatus, abnormalities of the upper extremities, atrophy of the left forearm and hand, club hand, mental debility and bilateral synkinesia or mirror movements.

The condition may readily be mistaken for tuberculous of the cervical spine. The differential diagnosis depends upon (1) absence of rigidity, (2) motion without pain, and (3) positive roentgen findings.

and mice permanently by thorough irradiation of the gland were unsuccessful.

The question of greatest importance arising from these studies is whether the so-called growth hormone of the hypophysis alone functions in neoplastic extension through acceleration of growth or whether there is another quite distinct hypophyseal mechanism functioning through retardation of growth. From the evidence at hand it is impossible to decide whether the substance of the urine of pregnancy functions in the absence of the hypophysis. To answer this question it will be necessary to find out whether hypophysectomy in the mouse produces the profound effect demonstrated by dosage with preparations of the urine of pregnancy and whether proper administration of these preparations to rats will produce greater effects than hypophysectomy or irradiation of the hypophysis.

JOSEPH K. NARAY M.D.

Aron, M.: The Presence of a Specific Principle in the Urine of Persons Suffering from Cancer (*Présence d'un principe spécifique dans l'urine des individus atteints de cancer*). *Presse méd. Par.* 1934, xlm 833.

The author believes that he has demonstrated a specific principle in the urine of persons suffering from cancer. The method he uses for its demonstration is as follows:

A given volume of fresh urine is mixed with three times its volume of 95 per cent alcohol. The mixture is then shaken until a precipitate forms. The clear liquid is poured off and the rest is centrifuged. The precipitate is dried, and from 5 to 10 c cm. of physiological salt solution are added to the amount contained in 100 c cm. of urine. The suspension is shaken vigorously for a long time and then filtered. To the filtrate, which contains the active principle, a few drops of 3 per cent tannic acid are added as a preservative. The filtrate is injected subcutaneously into rabbits weighing from 1,500 to 2,000 gm.

If the subject studied is suffering from cancer the injection causes disappearance of the lipid inclusions in the spongiocytes of the fasciculated layer of the suprarenal cortex. The reaction is very constant. It was not so constant at first when only 100 c cm. of urine were employed, but since the use of from three to five times that amount it has been negative in only two of sixty cases, and in one of these only 450 c cm. of urine were used. It has been doubtful in only three cases. It has been negative in tests of the urine of normal persons, pregnant women, and persons with diseases other than cancer including syphilis, tuberculosis, kidney disease, typhoid, scarlatina, acute articular rheumatism and septicemia.

In Aron's opinion the substance is a specific antibody which produces antibodies in the body of the rabbit. This is suggested by the fact that when the blood serum of rabbits treated with cancer urine was injected into normal rabbits and the lat-

ter were then given injections of cancer urine the suprarenal cortex was not affected although the same urine injected into control animals not given the preliminary injection produced the usual reaction.

The author believes that the principle is derived from the degeneration or metabolism of the cancer cells or from some parasite or micro-organism.

AUSREY GOSWAMI M.D.

Il'enko, P.: Diagnostic Errors in Sarcomata of the Limbs and Trunk (*Diagnostische Irrtümer bei Sarkomen der Gliedmaßen und des Rumpfes*). *Sowjet Chir.* 1933 iv 630.

In the treatment of bone sarcoma a good result can be obtained only if the diagnosis is made early. However as the clinical picture is obscure an early diagnosis is not easy. The various symptoms of bone sarcoma—pain, tumor, spontaneous fractures—may occur in association with other processes such as specific granuloma and osteitis fibrosa. Moreover even roentgen examination and biopsy do not always prevent diagnostic error. The latter is usually to be avoided as it hastens the growth of the sarcoma, a fact demonstrated both clinically and experimentally. Chemical and serological reactions have not as yet proved of much diagnostic aid.

In the Moscow Institute for the Treatment of Tumors, 137 cases of sarcoma of the limbs and trunk were seen in the period from 1921 to 1931. A diagnostic error was proved in 71 (53 per cent). In 70 of the latter the incorrect diagnosis was made in another institution. In 37 (53 per cent) of the 71 cases there was a history of trauma. Most of the patients were between twenty and thirty years of age. The chief symptom was pain. In 4 cases the earliest symptom was a rise in the temperature to 38 degrees C. The incidence of incorrect diagnosis was highest in cases of sarcoma of the thigh and of the leg (90 and 18 per cent respectively). This is explained by the frequency of trauma and sarcoma of the leg.

In the 71 cases cited 113 diagnostic errors were made as one and the same case was studied in different institutions. In 14 cases a diagnosis of sarcoma was made when the tumor was not a sarcoma, and in 53 the condition was believed to be an inflammation or some other benign process when it was found at the Institute to be a sarcoma.

Of the 53 patients who were subjected to operation, 5 died and 48 were discharged in good condition.

In the differential diagnosis between sarcoma and sciatitis it must be borne in mind that in the latter condition the attacks of pain are acute and cease under treatment by rest and the application of heat, whereas in sarcoma they gradually increase and are not relieved by conservative treatment. The diagnosis between sarcoma and tuberculosis may be very difficult as many of the symptoms are common to both conditions. Sometimes localization (the metaphysis in cases of sarcoma, the epiphysis in

cases of tuberculosis) is of aid. Muscle atrophy, sequestrum formation, relief of the pain by rest and the formation of fistulae are characteristic of tuberculosis, whereas spontaneous fracture is suggestive of sarcoma. Chronic osteomyelitis may simulate sarcoma, especially when it is of the sclerosing form (Simon). In the prevention of diagnostic errors the roentgenogram is of aid. A layer like thickening of the periosteum regeneration of bone and sequestrum formation are found only in osteomyelitis and not in sarcoma. Luetic processes must also be taken into consideration. In some cases the roentgenogram may be obscure. In lues the localization in the diaphysis and the eburnation of the bone are typical. Sequestrum formation nocturnal pain and the absence of clinical symptoms at the beginning of the disease suggest lues. Biopsy and the Wassermann reaction are not always of aid in the diagnosis. In some cases bone cysts, echinococcosis, Brodie's abscess, and subperiosteal hematomata may suggest sarcoma. These conditions as well as other pathological processes can be correctly diagnosed only when all diagnostic procedures are employed. However these measures alone are not sufficient. To prevent diagnostic errors a critical evaluation of the procedures is essential and physicians must know the limits of applicability of every method in order to avoid expecting too much from biopsy or the roentgenogram. SILVERBERG (Z)

Krehbiel O F, Haasensen, G. D. and Plantinga, H.: The Effect of the Anterior Pituitary Hormones on the Growth of Mouse Sarcoma. *Am J Cancer* 1934, xxi 346

It has been suggested by H. Zondek, B. Zondek and Hartoch that the component of the hormone of the anterior lobe of the pituitary gland which causes ovarian follicle ripening, Prolan A, may act to hinder tissue growth in general and particularly the growth of tumors. To test this hypothesis the authors carried out a series of experiments in which hormone of the anterior lobe of the pituitary gland containing a mixture of both the follicle-ripening component, Prolan A, and the luteinizing component Prolan B was administered to mice inoculated with transplantable carcinoma. Frequent and exceedingly large doses of the hormone were given. From the results the authors concluded that transplanted mouse carcinoma may be inhibited by injections of prolane. In twenty four animals treated by Wiesner and Haddow no inhibitory effect such as that reported by Zondek was observed.

Because of this conflicting evidence it seemed advisable to repeat the experiment. Of sixty mice with sarcoma, only fifteen survived the period of observation. Of the latter seven had tumors which were only slightly smaller than the tumors in the controls while the remaining eight had tumors as large as, or larger than those of the controls. As the condition of all of the treated animals was affected unfavorably by the injections, it would be expected that the tumors of these animals would be smaller than those

of the untreated controls. The experiments failed to show the specific and marked inhibitive action of the hormone of the anterior lobe of the pituitary gland on tumor growth claimed by Zondek and his collaborators.

The authors emphasize that the impossibility of demonstrating an inhibitive action of the hormone on tumor growth despite the use of doses which were enormous as compared with the amount of the hormone normally excreted by the adult human being should discourage attempts to use the hormone in treating human cancer. JOSEPH K. NARAT, M.D.

DeMontbreun W. A. and Goodpasture, E. W. An Experimental Investigation Concerning the Nature of Contagious Lymphosarcoma of Dogs. *Am J Cancer* 1934, xxi, 195

The authors review the literature and report experiments regarding the transmission of contagious lymphosarcoma in dogs.

They state that the tumor inducing agent is destroyed by drying, freezing, glycerination and mechanical means. No evidence was obtained that a virus or any other infectious agent separable from the cells is concerned in the causation of the disease.

Contagious lymphosarcoma is apparently a true neoplasm and is transferable by the inoculation of living tumor cells to ulcerated surfaces. The origin of the tumor cells has not been determined definitely but the cells are probably derived from the lymphocytic series.

The presence of neutral fat droplets in the tumor cells is recorded as a cytological characteristic.

Multiple tumors can be induced by the intravenous injection of tumor cells in suspension. Growth of the tumor is associated with a variable immunity to re inoculation, and metastases seem to be related to periods of low resistance or absence of resistance which may occur during stages of massive and active tumor growth. A substantial immunity may be broken down by the injection of large numbers of tumor cells.

Serum obtained from rabbits immunized with emulsions of tumor tissue is capable of destroying the tumor cells *in vitro* and prevents the appearance of a tumor following inoculation of the treated cells. Serum obtained from rabbits immunized with normal dog serum affects tumor cells *in vitro* only slightly and fails to prevent their growth when injected subcutaneously into dogs.

The action on tumor cells of the heterophilic antibodies contained in such antisera is negligible.

In conclusion the authors state that further studies are required to demonstrate definitely the presence of specific tumor-cell antibodies in the serum of animals immunized with emulsions of this tumor. SAMUEL KAHN, M.D.

Holt R. L., and Macdonald A. D.: Observations on Experimental Shock. *Brit J J* 1934 i 1070.

The authors review and accept the evidence against the traumatic toxemia theory of secondary

shock. They state that in repeating the work of Smith and of Blalock with slight differences in technique they were unable to demonstrate the presence of a depressor substance in the blood from a traumatized area. In none of their experiments was the blood pressure reduced to a shock level unless there had been a loss of plasma and blood into the injured tissue sufficient in itself to account for the effects observed. This is in accord with the findings of recent American experimental work.

JACOB M. MORA, M.D.

DUCTLESS GLANDS

Lbermitte, J. and Pagniez, P.: The Pseudo-Hypophyseal Infundibulotubercular Syndrome (Syndrome infundibulo-tuberculaire pseudo-hypophysaire). *Presse Méd.* Par 1934, 43, 649.

The authors report the case of a woman forty two years of age who came to the hospital because of diabetic symptoms—polyuria, polydipsia, glycosuria, hyperglycemia, obesity, dysmenorrhea and irregular menstruation. She stated that during infancy she had suffered from poliomyelitis and from encephalitis of undeterminable origin. The authors believe that the encephalitis was due to the poliomyelitis virus. At the age of forty years the patient developed facial paralysis with crossed hemiplegia.

On the basis of the history and the roentgenographic demonstration of enlargement of the sella, a hypophyseal syndrome was considered.

The patient died of acute apoplexy. At autopsy the hypophysis and sella were found absolutely normal, but the hypothalamic centers appeared on gross examination to be markedly altered by an infectious and degenerative process. The findings of autopsy and of histological examination of the brain, especially of the infundibulum and mesencephalon, are described in detail.

The authors contend that this syndrome should be termed the hypothalamic syndrome or "infundibulotubercular syndrome" rather than the "hypophyseal syndrome." They state that the hypothalamus is considered to be a regulator of fat, carbohydrate, and water metabolism.

A. F. LASE, M.D.

Kitel, H., and Looser, A.: The Anterior Lobe of the Pituitary Gland, the Thyroid Gland, and the Carbohydrate Metabolism of the Liver. *Internat Clin.* 1934, 4, 66.

There is considerable evidence both experimental and clinical supporting the contention that the symptoms which follow the injection of substance of the anterior lobe of the pituitary gland are very similar to those characteristic of hyperthyroidism. Such an injection is followed by an elevation of the basal metabolic rate, exophthalmos, a reduction in the amount of iodine in the thyroid gland, a concomitant increase in the iodine in the blood, and a change in the histological picture of the thyroid gland. It has been shown that the liver is responsible

for removal of the toxic elements of the thyroid hormone. However the liver may be damaged by the thyroid hormone. This is evident from the fact that in thyrotoxicosis there is a glycogen-fat-creatin- and creatinine depletion of the liver. The greater the impairment of function, the more intense are the symptoms of hyperthyroidism.

In order to determine whether an injection of substance of the anterior lobe of the pituitary gland produces an effect analogous to that of hyperthyroidism, the authors attempted to prove (1) that an injection of this substance causes a decrease in the glycogen content of the liver similar to the decrease produced by thyroxin and thyroid gland substance, and (2) that the glycogen reduction results from the action of the thyroid gland. The experiments were carried out on guinea pigs. First, the normal glycogen content of the liver was determined. The average liver glycogen was found to be 2.50 per cent, and the average muscle glycogen 0.52 per cent. The liver was studied also histologically. The authors state that Looser has been able to isolate from the pituitary gland a thyrotropic substance which has no effect on the sexual organs. Following a single injection of this substance the average liver glycogen was 2.67 per cent and the average muscle glycogen 1.1 per cent. Definite changes in the thyroid were found. These consisted of a diminution in the colloid and an increase in the height of the epithelium. They were more marked in the central portion than at the periphery of the gland. When repeated injections of substance of the anterior lobe of the pituitary gland were made, the liver glycogen decreased remarkably. In some experiments it decreased to as low as 0.035 per cent after eleven injections of the thyrotropic substance. The muscle glycogen decreased to 0.4 per cent. Characteristically there was a wide variation in the muscle-glycogen values in the individual animals. The thyroid showed complete disappearance of the colloid, papillary formation, and stratification of the epithelium. The changes in the thyroid were the same as those found in diffuse toxic goiter. The characteristic changes in the liver glycogen were noted after five days of injections of substance of the anterior lobe of the pituitary gland.

The investigation showed that the weight of the thyroid varied inversely with the glycogen content of the liver. After the liver had been depleted of its glycogen content by repeated injections of the pituitary substance, its glycogen quickly returned and, concomitantly the hyperplastic changes in the thyroid disappeared following withdrawal of the thyrotropic substance.

In the cases of thyroidectomized animals the injection of substance of the anterior lobe of the pituitary gland produced no change in the liver glycogen unless small thyroid rests remained.

The authors found also that the injection of a thyrotropic substance which had been heated in physiological salt solution at 100 degrees for one hour in a reflux condenser caused a decrease in liver

glycogen and evidence of increased activity of the thyroid gland. However larger quantities were necessary to produce these effects. The authors believe that most of the activity of the substance was destroyed by the heat but that a portion remained uninjured.

ALTON OCMORE, M.D.

Moore, J. J. and de Lorimer, A. A. Roentgenographic Studies of Parathyroid De-Ossification. *Am J Roentgenol*, 1934, xxvi, 496

The authors present a brief review of the literature on the skeletal changes accompanying hyperplasia of the parathyroid glands and parathyroid tumors and describe in detail the roentgenographic changes occurring in the bones of rabbits given doses of parathyroid extract.

In addition to X-ray studies observations were made on the calcium and phosphorus balance in the experimental animals. Three groups of rabbits were studied. Those of Group 1 were used as controls. Those of Group 2 were given varying doses of ammonium chloride, which produced a more or less severe acidosis and those of Group 3 were given sodium bicarbonate in an amount sufficient to cause a marked alkalosis.

The removal of bone salts following the administration of parathyroid extract was most marked in the animals in which acidosis had been produced and least marked in the animals given sodium bicarbonate. On the basis of the X-ray pictures the authors distinguish three stages in the de-ossification changes following the administration of parathyroid:

1. A substitution of trabeculation shelves for either the amorphous deposits or for the intersecting trabeculations of the medullary metaphyseal region.
2. A thinning of the cortices, manifested both by an increase in the radiolucency and a coarsening of the cortical trabeculations especially in the metaphyseal regions.

3. An even greater resorption, a further thinning of the cortices, manifested by (a) very marked radiolucency (b) depletion of the trabeculation framework and perhaps local evidences of cystic dissolution, and (c) thinning of the epiphyseal cancellations.

LESTER R. DRACONOT, M.D.

Lisner, H., Taylor, F. B., and Leet, N. B. The Adrenal Cortical Therapy of Addison's Disease in Clinical Practice. *Endocrinology* 1934 xviii, 333.

The authors review the results obtained in over 100 reported cases of Addison's disease treated with adrenal cortex extracts. They then report 3 cases of their own in which inadequate amounts of eschatin were given and the patient succumbed. The dosage necessary for beneficial results was from 50 to 100 c.c.m. in times of crises and from 2 to 5 c.c.m. daily as a maintenance dose. When a diet with a high salt content is given the dosage of cortical extract may be reduced. The high cost of cortical extract makes its use prohibitive in most cases.

ROBERT ZOLLINGER, M.D.

SURGICAL PATHOLOGY AND DIAGNOSIS

Longgenghager, K.: The Mechanism of Air and Fat Embolism (Wirkungsweise der Luft und Fett embolie) *Schweiz. med. Wochenschr.* 1934, i 146

It has been assumed that the cause of death following the introduction of large quantities of air into the veins is the accumulation of blood foam in the right ventricle. As this foam is compressible, the heart is able to contract. However, the internal pressure is not great enough to open the pulmonary valves. Dilatation of the right ventricle results from a new inflow of blood. No more blood is expelled from the right ventricle the left ventricle receives too little blood, and a vicious cycle is produced.

To disprove this hypothesis and explain the physical relationships in air and fat embolism the author carried out a series of experiments on rabbits and larger dogs. Air was injected into the jugular veins (from 3 to 5 c.c.m. in the experiments on rabbits, and from 30 to 40 c.c.m. in those on dogs). The well-known mill-stream murmur occurred at once. The right ventricle dilated, while the pulmonary artery remained tensely distended. The left ventricle pumped itself empty the lungs became pale, and the arterial blood pressure sank to zero. In order to demonstrate that the circulatory obstruction was in the pulmonary circulation rather than in the right ventricle the author performed the following experiments:

1. After the arterial blood pressure had dropped to zero the pulmonary artery was incised. A large amount of foam escaped and the right ventricle became small again.

2. Before the dilated pulmonary artery was cut it was ligated on the ventricular side. Again, a large quantity of foam escaped when it was incised. This observation proves that foam can escape from the right ventricle.

3. Instead of being injected into the jugular vein, the air was introduced directly into the pulmonary artery. When this was done the smacking murmur occurred immediately, the right ventricle dilated, and the left ventricle again pumped itself empty. This proved that the obstruction was in the lungs.

4. The fatal dose of air was injected into the left auricle. A sudden drop in the arterial blood pressure did not occur.

5. The pressure in the pulmonary artery became doubled during the experiments whereas the pressure in the greater circulation decreased rapidly.

6. After the injection of the fatal quantity of air into the jugular vein a dye was injected into the pulmonary artery. At necropsy the dye was found in the right heart but not in the left. This demonstrated insufficiency of the pulmonary valves under the influence of the increased pressure in the lesser circulation.

7. The right heart left *in situ* after the air embolism beat normally again when the pulmonary artery was incised and the right auricle was constantly perfused with Ringer's solution or blood.

8 Aspiration of air out of the right ventricle by puncture was not sufficient to stop the progress of the air embolism. Favorable results following puncture are explained by the use of a quantity of air insufficient to cause death.

9 Small quantities of air in the right ventricle usually disappear out of the chamber quickly.

10 In experiments on animals the condition of air embolism can be relieved quickly by perfusing Ringer's solution into the left auricle and aspirating it out of the pulmonary artery.

11 Except in the presence of a patent foramen ovale, air was never found in the greater circulation.

The conclusion drawn from these experiments—that the pulmonary circulation is obstructed by foam—was expressed previously by Hasehorst and Wolf but has not been generally accepted. Zangger attributed the blocking of the pulmonary capillaries to the so-called meniscus effect. The author tried to explain this by experiments with large and small glass capillaries. To such experiments the well-known physical laws of surface tensions in capillaries apply. In a fine capillary a liquid rises higher the narrower the tube. It rises to the level where the fluid column and the surface area pressure balance.

The surface meniscus exerts a pull in the direction of its concavity. This is greater the smaller the diameter of the meniscus and is indirectly proportional to the square of the diameter. The meniscus in a capillary exerts a very considerable *vis-a-tergo* with a resulting resistance. When, as in the human body, there are differences in the lungs, the anterior smaller menisci present a considerable resistance to the passage of the air bubble.

Fat behaves similarly to air. To pass through a narrow area in a blood vessel an air bubble requires three times as much pressure as a fat drop in a similar liquid. The phenomena produced by fat drops are similar to those produced by air bubbles except that in fat embolism, in contrast to air embolism, fat is found throughout the body because drops of fat have a surface tension which is two-thirds that of blood.

For the prevention of fat embolism the author advises that manipulations on bone be done in a bloodless field. Under such conditions fat droplets cannot enter the lumina of the veins. The author expresses the hope that the meniscus theory which has been clearly proved, will replace the heretofore accepted air heart theory. SCHWENKE (Z)

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COLLECTIVE REVIEW

RECENT SIGNIFICANT LITERATURE ON THE TRANSMISSIBLE BACTERIOLYTIC PRINCIPLE (BACTERIOPHAGE)

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THE recent articles in the medical literature on the subject of bacteriophage may be divided into three groups: (1) those written by laboratory workers who have studied certain phases of the chemical, physical, or biological behavior of the lytic principle and have been interested in the Twort-d'Herelle phenomenon, as such, rather than in its clinical application; (2) those written by laboratory workers who have tried to apply the lytic principle either prophylactically or therapeutically in well-controlled series of experiments on laboratory animals; and (3) those written by clinicians who have tried to apply the lytic principle therapeutically in controlled or uncontrolled series of cases of infectious disease in man.

LABORATORY REPORTS OF CERTAIN PHASES OF THE TWORT D'HERELLE PHENOMENON *IN VITRO*

The first group of articles on bacteriophage is by far the largest. Apparently there are numerous workers in various departments of bacteriology who are trying to solve some of the riddles connected with the Twort-d'Herelle phenomenon. Many of their articles deal with controversial points, chief of which seems to be whether the active principle is a living ultramicroscopic filterable virus as d'Herelle (24) claimed or is not such a virus.

Bronfenbrenner (6), for example, questions d'Herelle's theory as he has been unable to confirm many of d'Herelle's observations although he admits or has confirmed others. Bronfenbrenner

believes that bacteriophage is colloidal and either particulate or attached to particulate matter. He does not think that the areas of phage activity on solid media necessarily indicate colonies of bacteriophage. He admits that the increase in the concentration of the active agent in the solution takes place exclusively in the presence of live and actively multiplying susceptible bacteria, but he believes that the multiplication of phage and the lysis of the bacteria do not go hand in hand and are not interdependent.

In studying the process of lysis, Bronfenbrenner found that the bacteria swell up and then suddenly disappear, the viscosity of the medium then increasing. He concluded that the bacterial cytoplasm undergoes digestion as the cell swells, and that when the membrane ruptures it goes into solution at once.

Although Bronfenbrenner believes that bacteriophage may be derived from the bacterial protoplasm, he has never been able to induce the spontaneous appearance of phage in cultures of various types known to be free from phage. As he has shown that phage may be carried by a culture for a long time without revealing itself, he emphasizes that reports of the spontaneous origin of phage in old cultures must be interpreted with this fact in mind.

Bronfenbrenner admits that the bacteriophage principle is antigenic and when injected into animals produces an antibody which is independent of the antibodies produced by the bacterial antigens which may be present in the

filtrate containing the phage. When the latter antibodies are absorbed from the serum the presence of the phage antibody in the serum may still be demonstrated.

In Bronfenbrenner's opinion, one of the chief arguments against the theory that the bacteriophage is a viable virus is the fact that he has been unable to detect by means of a microspirometer any evidence of respiration during a period of ninety six hours by a bacteriophage which contained 10^{12} active units per cubic centimeter. He contends that if the bacteriophage requires at all its respiration must be 10,000 times slower than the respiration of an equal number of bacterial spores or it would be detected by the microspirometer in that length of time.

Other workers have taken issue with Bronfenbrenner on a number of the points cited. Asheshov and his co-workers (3, 4, 5) are convinced that the bacteriophage is a living virus and believe that the plaques or "clearings" which appear on solid media represent colonies of bacteriophage. They claim that on the basis of morphology and behavior these colonies may be classified into several groups. Pure lines of bacteriophage may be obtained by repeated fishing of the plaques just as pure lines of bacteria are obtained.

Burnet (8, 9, 10, 11) in a series of excellent articles, takes up a number of these points. He has been able to classify phages not only by the variations in the appearance of the plaques but also by the antigenic differences of different races and their behavior with respect to the various associated phases of certain strains of bacteria. Both Burnet and Asheshov have found phages which act only upon rough or upon smooth variants of certain cultures, and Burnet was able to rear cultures containing both rough and smooth forms of one or the other form by the use of the appropriate phage. In each case the resistant form was the non-lysable variant. Burnet was able to classify certain coli-dysentery phages by the resistance technique of Bail. By studying the resistant forms which developed following the application of a series of phages to a single strain of bacillus coli communis, he was able to divide them into 4 groups. On the basis of serological differences he divided the coli and dysentery phages into 12 groups. He differs with d Herelle who has argued for the unity of the lytic principle, but agrees with him that bacteriophages are living viruses. He believes that the serological differences support the theory that bacteriophages represent a heterogeneous assemblage of independent viruses parasitic on or living symbiotically with bacteria. He was able to correlate the

serological classification with the findings of certain biochemical tests especially in regard to the rate of photodynamic inactivation by methylene blue, the ability of the phages to lyse in the presence of citrate, and the rate of their inactivation by strong urea solutions.

Hadley who has been particularly interested in bacterial dissociation, has tried to correlate this dissociation with the changes taking place in cultures the growth of which is modified but not destroyed by bacteriophage. He expressed the view that bacteriophage action is far from being a parasitism of bacterial cells by a foreign filterable virus, but merely one aspect of the large problem of microbial dissociation and probably involves a reproductive and pseudolytic mechanism. Hadley and Jimenez (22) found that the process is reversible. Phage plus culture produced variants. Likewise in cultures in which variants were produced by other means, bacteriophage developed spontaneously.

From a study of the size of the bacteriophage unit, Rahn (35) concluded that the bacteriophage cannot contain the complete growth mechanism of a bacterial cell and its protoplasm must be similar to that of its host. He estimated its size to be about that of a gene, and suggested that the bacteriophage is an unbalanced protoplasm molecule of the bacterium which has lost adaptation to the regulating mechanism in the cell.

Colvin (15) demonstrated that bacteriophage is often present in the air of a laboratory in which it is being studied and that therefore cultures of bacteria may be easily contaminated by it and the "spontaneous generation" of bacteriophage must be discounted. After a bacillus megatherium bacteriophage was sprayed about a room with an atomizer he observed the formation of a number of plaques on exposed Petri plates freshly seeded with bacillus megatherium. Plaques appeared on the plates as late as eighteen days after the spraying. In a draughty hall particles of phage were deposited on exposed Petri plates at a distance of 30 meters.

Serife (38) studied plaques of bacteriophage which had an outer zone. He was able to demonstrate that in this zone lysins free from phage were present. This observation seemed to indicate that certain phages are capable of producing diffusible lysins which are not transmissible in series but are antigenic and produce antibodies preventing the lytic action of the bacteriophage.

Experiments carried out by Eaton (18) yielded results quite contrary to those of Bronfenbrenner with respect to the respiration of bacteriophage. Eaton found that a culture of staphylococ-

cus lysed by bacteriophage and containing a negligible number of living bacteria continued to give off carbon dioxide and to take up oxygen for several hours. He therefore concluded that either the bacteriophage or some product of its action respired.

A number of investigators have studied the antigenic properties of bacteriophage. Schultz Quigley, and Bullock (37) found that the neutralizing antibodies formed in serum against bacteriophages are highly specific in their action. They state that in some cases the antisera will neutralize only the strictly homologous lysates, leaving the same bacteriophage entirely untouched when propagated at the expense of another species or strain of bacteria. Bacteriophages inactivated by heat, trypsin, or methylene blue failed to stimulate the production of antibodies while formalin inactivated phages continued to be antigenic. On exposure to high temperatures, the neutralizing properties of antiphagic sera were gradually lost 80 degrees C for one hour completely destroying them. These facts were interpreted as indicating that the antigen-antibody reaction closely paralleled the toxin antitoxin reaction.

Andrews and Elford (2) found that the neutralization of phage action with antiphagic serum was never complete but followed a "percentage law" irrespective of the amount of phage. It did not follow the law of multiple proportions. The incompletely neutralized phage began to multiply only after some delay and the plaques were small.

Kligler and Olitski (26) found that they could purify bacteriophage by adsorption with kaolin followed by elution with N/100 sodium hydroxide. This yielded a potent phage relatively free from protein which could be further purified by successive elutions. The protein free potent phage retained its antigenic property.

Caldwell (12) found that he could produce phage in a synthetic medium containing 0.4 gm. of sodium ammonium phosphate, 0.2 gm. of acid sodium phosphate, and 1.0 gm. of dextrose in 100 c.cm. of distilled water. The active filtrate did not give the biuret reaction nor produce anaphylactic reactions in guinea pigs. The potency of the phages for the propagating organism could be increased by serial passage while their potency for other strains did not decrease. Titration of these phages was more satisfactory in the synthetic medium than in broth.

Clifton and Lawler (14) investigated the inactivation of staphylococcus bacteriophage by various dyes. They confirmed the findings of Schultz and Krueger that 0.05 per cent methylene

blue will inactivate bacteriophage in twenty four hours. They carried out similar tests with toluidine blue, methylene violet, methylene green, methylene azul, thionin, eosin B and phenol red. Of these, only toluidine blue inactivated bacteriophage. The fact that neither methylene blue nor toluidine blue produced inactivation when added to a bacillus coli bacteriophage indicated that inactivation by dyes is limited.

Krueger (29) found that heat inactivation of staphylococcus bacteriophage proceeds strictly in accordance with the equation for a monomolecular reaction. His data seemed to indicate that lysates do not consist of particles possessing varying degrees of resistance to heat. He concluded that the chief reaction involved in heat inactivation is a protein denaturation.

Krueger and Baldwin (30) found that phage can be inactivated by mercuric chloride and then reactivated by the precipitation of the mercury with restoration of the original titer even after contact long enough to kill bacterial spores. Krueger and Elberg (31) found that phage can be inactivated with a 1:5000 solution of potassium cyanide and then reactivated by silver nitrate with only slight, if any, diminution of its potency. They believe that these facts are more suggestive of enzyme action than of viability of bacteriophages.

Phages have been found only rarely for the pathogenic spore forming bacteria, but Cowles (17) has discovered a phage for bacillus tetani. Of 5 strains tested with sewage water in a medium containing cysteine hydrochloric acid he found one potent and one weak bacteriophage. The potent phage did not produce lysins under aerobic conditions.

ANIMAL EXPERIMENTATION WITH BACTERIOPHAGE

The second group of articles on bacteriophage is small and deals with certain observations with regard to the effect of bacteriophage as a prophylactic or therapeutic agent in natural and experimentally induced disease in animals.

Tempé and Uhlhorn (41) examined 23 samples of blood from rabbits and guinea pigs for the occurrence of bacteriophage against staphylococcus, bacillus coli and bacillus dysenteriae. A transmissible lytic principle was found in 7. In some of the latter phages acting simultaneously on all 3 species of organisms were found. No similar phages were obtained from the stools of the animals which yielded potent phages in their blood. The technique used was simple. Seven tubes of broth were inoculated with a drop of various bacterial cultures and a few drops of

diet the parenteral administration of fluid in the cases of children and the administration of boiled milk, bismuth and paregoric. Records were kept of the age of the patient, the onset and course of the disease before the patient's admission to the hospital, the temperature before, during and after the treatment, the number and type of stool before, during and after the treatment, special toxic or neurological symptoms, unusual complications, and the number of days the patient remained in the hospital. The experiments and observations were continued for two years. At the end of that time there was no evidence of clinical benefit in the treated cases. One is tempted to ask why the doses of phage were so small, and whether there was any proof that the phage entered the intestine.

Taylor, Greval and Thant (40) treated 20 cases of bacillary dysentery and 14 cases of cholera with bacteriophage by mouth and compared the results with those in 20 and 19 control cases respectively. No significant difference between the treated and control cases was noted.

Naidu and Avani (34) used bacteriophage in the treatment of 33 patients with bubonic plague. The phage was given intravenously and injected into the buboes twice a day. The mortality was 100 per cent. The phage was potent against the organism *in vitro* but when injected into rabbits was ineffective.

Gernex and Breton (21) treated 11 cases of typhoid and paratyphoid fever with bacteriophage prepared by electrophoresis and therefore practically free from peptone. In 8 cases the treatment had a very favorable effect; in 1 case a doubtful effect and in 2 cases, no effect. The cases with a favorable effect showed a very definite response with a fall in the temperature by crisis or rapid lysis. While they constituted only a small series and no controls were presented, the successful results encourage further use of the purified form of bacteriophage.

It is evident from this review of the recent literature that the best work in the study of bacteriophage is being done by laboratory workers without clinical contacts. Most of the clinical observations have been very poorly controlled. When they have been well controlled there has been very little evidence of the efficacy of bacteriophage as a therapeutic agent. There is the utmost necessity for careful co-ordination of clinical and laboratory observations in this field.

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ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HEAD

Coates, G. M., Erner, M. S., and Peraky, A. H.: Lateral Sinus Thrombosis, with a Review of the Literature. *Ann. Otol. Rhinol. & Laryngol.* 1934, xlii, 419.

Of 669 cases in which mastoidectomy was performed in the Graduate and Mt. Sinai Hospitals, Philadelphia, between January 1925 and January 1933 lateral sinus thrombosis was found in 14 (1.4 per cent). Nine of the patients with lateral sinus thrombosis recovered, and 5 (35.7 per cent) died. Two of the latter had meningitis, and 1 a brain abscess in addition to the thrombosis. If these 3 are excluded, the mortality was 14.3 per cent.

Lateral sinus thrombosis is more apt to occur on the right than the left side. To explain this observation, the following facts have been cited:

1. The right lateral sinus is usually larger than the left, probably because the superior longitudinal sinus communicates principally with the right lateral sinus whereas the straight sinus opens principally into the left.

2. A greater amount of blood is carried in the superior longitudinal sinus than in the straight sinus.

3. The lateral sinus on the right extends further inward and forward than the lateral sinus on the left.

4. The lateral sinus on the right lies deeper in the mastoid bone and consequently comes in closer contact with the mastoid cells than the lateral sinus on the left.

5. There may be entire absence of one lateral sinus, and the left sinus is absent more frequently than the right.

In 3 of the 14 cases reviewed by the authors pre-operative X-ray examination showed the difference in the size of the sinuses to be only 1 mm., whereas in the others it ranged from 6 to 10 mm. In 8 cases the thrombosis occurred on the right side and in 6 on the left. Seven of the patients were males and 7 were females.

The lateral sinus may become involved by direct extension to the vein from the mastoid cells, the so-called extravascular route, or by extension through a tributary vein, the intravascular route. Under the latter circumstances the outer wall of the vein may appear normal although the vein is thrombosed. The development of thrombosis does not require the penetration of bacteria to or through the intima; the chemotoxic action of bacteria present in the wall of the sinus may produce the clot. For the formation of bacterial toxins lowering the bactericidal properties of the blood and thereby favoring thrombus formation inflammatory changes in the intima are

necessary. The majority of investigators believe that thrombi may be either sterile or infected. The thrombus may be of the mural type, that is, attached to the vessel wall and not completely obliterating the lumen. It may progress in either a central or a peripheral direction.

Three types of lateral sinus thrombosis have been recognized: (1) that present at the time of the primary operation on the mastoid, with evidence of its existence; (2) the latent type, which becomes manifest because of the operation; and (3) the postoperative type developing entirely in the period after the operation.

Whereas injury and virulence of micro-organisms favor the development of thrombosis, exposure of the lateral sinus does not necessarily predispose to it. Postoperative sinus thrombosis is differentiated from the latent condition by (1) absence of symptoms of thrombosis before operation, (2) a long interval, usually two weeks, between the exposure of the sinus and the first appearance of the symptoms of thrombosis, and (3) absence of evidence of thrombosis at the time of the operation. In the latent form, extensive thrombosis is usually found at operation.

Of the cases reviewed by the author, a lateral sinus thrombosis was found at the time of operation for acute mastoiditis in 9. In most of these the mastoiditis was of the hemorrhagic or coalescent type. In 2 of the other cases it was subacute, and in 3 it was chronic.

The symptoms of lateral sinus thrombosis are of 3 types: (1) those due to systemic phenomena, (2) cerebral symptoms, and (3) septic symptoms.

The systemic phenomena consist of chills and a characteristic spoked temperature which may recur within twenty-four hours or after two or three days. Between the attacks the patient may feel fairly well.

Among the cerebral symptoms are severe headache usually occurring at the height of the febrile attack, dizziness, nausea, and vomiting. Ocular symptoms may also be present. These include by peremias of the optic disk, optic neuritis, and choked disk. In children convulsions, lethargy, and meningeal manifestations such as the Kernig and Brudzinski signs, may occur.

The septic manifestations consist of positive blood cultures. It is therefore imperative that a blood culture be made in all cases. The blood should be taken at the termination of the chill. Unless some other focus of infection can be found, a positive blood culture in the presence of a subacute ear condition should suggest the presence of a sinus thrombosis or phlebitis. A negative blood culture does not rule out

this condition or a bacteriemia. A bacteriemia may be manifested by metastasis to various parts of the body such as the skin and joints, the cerebral structures, the liver, spleen, lungs, or kidneys. Skin and joint metastases occurred in 3 of the cases reviewed by the authors. Two of the patients with such metastases recovered. The authors believe that when such superficial metastases occur the prognosis is more favorable because the metastases probably represent fixation abscesses stimulating the defensive mechanism of the body. When metastases occur in more vital structures such as the brain, kidneys, liver, spleen, or lungs, the prognosis is grave. When they are localized in the lungs the prognosis should be guarded.

The diagnosis of lateral sinus thrombosis depends upon both general and laboratory findings. The condition should be suspected when a sudden rise in the temperature to 104 degrees F associated with tachycardia, chills, headache, nausea and vomiting occurs during the course of an otitis media or mastoiditis. Also of diagnostic importance is Gruninger's sign, an edematous swelling of the mastoid region extending upward toward the temporal region and often to the eyelid. This is probably due to thrombosis of the emissary vein or engorgement of the veins that drain into the internal jugular vein. Extension of the thrombosis into the jugular vein can be determined by palpation. A tough band is present in the course of the jugular vein along the anterior border of the sternocleidomastoid muscle. A laboratory aid of importance is a positive blood culture. This confirms the diagnosis. If the blood culture is negative, it should be repeated. In the presence of other confirmatory evidence, the Ayer-Tobey modification of the Queckenstedt test is of importance. This consists in obtaining an increase in the spinal fluid pressure by applying digital pressure to the uninvolved jugular vein. The test will be positive if there is complete occlusion of the involved vein, but is apt to be negative if only a mural thrombus is present. It is of no value when negative. It is particularly valuable in cases of bilateral mastoiditis, in which the presence of infection of either one sinus or the other is difficult to determine. The leucocyte count is of importance because an increase in the number of leucocytes indicates a more severe infection than that of mastoiditis. In the determination of the prognosis the Schilling hemogram should be of aid.

The treatment is supportive and operative. Supportive treatment consists of transfusions of from 150 to 250 c.c. of blood repeated at frequent intervals ranging from every other day to once a week. The donors may be immunized with non-specific protein by means of 1/10 c.c. of a stock vaccine of typhoid bacilli containing 50,000,000 killed organisms. The blood should be used from seven to eight hours after the resulting severe reaction. An excellent adjunct to the blood transfusions is the intravenous administration of from 10 to 20 c.c. of Pregl's iodine. Bacterial sera may be of value. Operative

treatment consists in opening the lateral sinus removing the clot and attempting to obtain free bleeding from both ends. There is considerable controversy in the literature concerning the necessity and value of ligating the jugular vein. In 3 of the cases reviewed by the authors the lateral sinus was opened without ligation. In 1 of these this procedure was supplemented by intravenous injections of methaphen. Complete recovery resulted in all 3 cases. In 11 cases the jugular vein was ligated and cut, and in 4 of these the facial vein was ligated in addition. The authors believe that it is perhaps better to ligate the jugular vein in all severe cases and add the necessary supportive treatment. ALTON OCTAVIA, M.D.

EYE

Holloway T. B.: The Ocular Findings in a Series of Intracranial Fibroblastomata. *Am. J. Ophth.* 1934 xvi 475

Intracranial fibroblastomata are usually more or less globular and encapsulated. They vary in consistency and vascularity. They are multinodular and occasionally multiple. They grow slowly and tend to cause marked displacement of the cortex. While the sulci may be invaded and prolonged compression may produce superficial atrophy of the convolutions of the brain, no infiltration of the brain occurs. The tumors may be present for years before they cause definite symptoms or an increase in the intracranial tension. The rise in the tension is less marked than would be expected from the size of the tumor. It is now well recognized that a thickening of the bone overlying or underlying the growth frequently occurs and produces a definite asymmetry of the skull.

The diagnosis is aided by inspection, palpation and auscultation. In certain cases a definite localized or generalized bruit may be heard.

Of fifty-five cases seen on the service of Frazier at the Hospital of the University of Pennsylvania, the frontal lobe was involved in twenty-one, the temporal lobe in nineteen, the parietal lobe in six and the occipital lobe in nine. Thirty of the patients were females. The average age of the patients was thirty-seven and a half years. The youngest patient was three years of age and the oldest sixty-five. In 87.3 per cent of the cases the symptoms developed between the ages of twenty-one and sixty years. Headache and impairment of vision were frequent initial symptoms. Headache developed first in fourteen cases and impairment of vision occurred first in twelve. In five cases they developed simultaneously. Among other symptoms caused by these tumors are convulsions, motor and sensory disturbances, aphasia, visual hallucinations, tinia, and impairment of hearing.

If headache and impairment of vision persist, a field test is indicated even if the disks and maculae appeared normal at the first examination. Nothing of diagnostic aid is determined from a study of the pupils. Exophthalmos and nystagmus occurred in

eight of the cases reviewed. In seven of these there was involvement of the frontal lobe, and in one, involvement of the parietal lobe. Impairment of the ocular muscles or facial musculature occurred in eighteen. Papilloderma was noted in thirty-eight cases, postpapillitic atrophy in seven, and primary atrophy in one. In nine, no disk changes were found. In seventeen cases the visual fields could not be determined. In seven, they were practically normal. In twelve, concentric contraction was noted. Right homonymous hemianopia was found in ten cases, left homonymous hemianopia in three, a quadrant anopia in two, and a bitemporal defect in the red fields in one. In one case there was enlargement of the blind spots, and in another a misleading suggestion of a defect in the right inferior quadrant.

The findings according to the location of the tumor are shown in a table. **LESLIE L. MCCOY, M.D.**

RAR

Kafka, M. M. *Tinnitus Aurium: Etiology, Differential Diagnosis, Treatment, and a Review of Twenty-Five Cases. Laryngoscope* 1934, xlv, 55.

The author reports in some detail twenty-five cases of tinnitus aurium. He is of the opinion that more constructive research on tinnitus and deafness must be carried out if patients are to respect the specialty of otology. He states that many persons suffering from these conditions are becoming the victims of quacks because they are not properly relieved by recognized otologists.

JAMES C. BRAISWELL, M.D.

Ashcroft, D. W., and Hallpike, C. S.: On the Function of the Sacculus. *J. Laryngol. & Otol.* 1934, xlv, 450.

In studies made by the authors of the saccular nerve of the frog with the use of a micromanipulative technique in combination with a conventional amplifying system and a cathode-ray oedlograph action currents were recorded. These currents occurred in response to vibrational stimuli, the frequency of the stimulus being reproduced accurately up to a frequency of at least 500.

The authors give their reasons for regarding the electrical changes recorded as true potentials. They conclude that, in the frog, the sacculus is an organ of vibration sense. They believe that their findings support the suggestion of Tait that, in man, the sacculus is concerned in the reception of bone-conducted sound. **HOWARD A. MCKNIGHT, M.D.**

MOUTH

Bailey, H.: The Salivary Glands Insofar as the Mouth is Concerned. *Practitioner* 1934, cxviii, 631.

Bailey says that with the aid of a good light and a spatula any physician can become master of intra-buccal pathology and diagnosis. The secretory

organs which discharge their products into the mouth are the parotid, submandibular and sublingual glands, the glands of Blandin and Nuhn, the palatal glands, the molar glands, and a myriad of small mucus-secreting units dotted over the floor of the mouth and the buccal aspect of the cheeks.

By far the most common site of salivary calculi is Wharton's duct. A calculus in Wharton's duct often remains undiagnosed for weeks. There may be a swelling in the submaxillary triangle, especially before or during meals, which may be associated with salivary colic. The pain may be mistaken for toothache. The stone pressing on the lingual nerve may cause a lingual neuralgia, and the pain may be referred down the side of the tongue.

On examination no saliva will be seen flowing from the obstructed duct when the patient is given a lemon to suck. The stone may be seen shining through the mucous membrane. If secondary infection is present, pus may be seen exuding from the duct. On palpation, an enlarged submaxillary lymph gland may be differentiated as there will be no intrabuccal extension. The stone may be palpated as the finger is passed along the duct.

A stone in the anterior two-thirds of Wharton's duct can be removed by sitting the opening with probe-pointed scissors. When the stone is situated in the posterior third of the duct its removal is more difficult and extirpation of the gland may be necessary.

Simple ranula is a clinical entity. Pathologically it should be regarded as a myxomatous degeneration of a mucous gland. It may be seen as a transparent cystic swelling usually under the tongue. Wharton's duct may be seen as an opaque strand coursing over the wall by which it has been displaced but takes no active part in the process. The treatment indicated consists of complete excision or marsupialization with preservation of the integrity of Wharton's duct.

In some cases of otherwise apparently typical ranula there is a cervical prolongation. These must be attacked through the neck.

A diagnosis of subacute or chronic parotitis may be made by making pressure over the parotid gland. When suppurative parotitis is present such pressure will cause purulent material to exude from the opening of Stenson's duct. The treatment indicated includes measures to obtain scrupulous cleanliness. The use of chewing gum may be of value. In acute suppurative parotitis the gland should be decompressed by the method of Blair. In resistant parotitis, catheterization of the duct and the injection of 1 per cent mercurochrome may be of great benefit. A sialogram may be made by injecting a dilute solution of lipiodol down the catheter.

GEORGE A. COLLETT, M.D.

Stacy, H. S.: The Role of Surgery in Carcinoma of the Buccal Cavity. *Med. J. Australia* 1934, 4, 73.

Among the factors causing irritation of importance in the production of leucoplakia and carcinoma of

the buccal cavity are ill fitting dentures sharp jagged teeth, the use of alcohol and tobacco, septic tonsils, and pyorrhea. The author suggests that the more frequent occurrence of malignancy in the buccal cavity among the poorer classes is dependent upon buccal sepsis.

According to Handley, lymph stasis may be a cause of carcinoma. This theory suggests that chronic irritants act upon the connective tissue to produce an obliterative lymphangitis to which the epithelial hypertrophy is secondary. Epithelial hypertrophy of this nature results in papillomata, and papillomata in any site are precancerous lesions. The pathogenesis of the papilloma is described as being secondary to obliteration of the central lymphatic of the papilla. This obliteration results ultimately in a reduction of the supply of oxygen to the connective tissue and epithelium and of the supply of the products of the rest of the body cells which are necessary to the cells of the papilla, changes necessitating the adoption of a new metabolism by the cells which are affected and favoring malignant degeneration.

Tuberculosis being of the nature of a chronic lymphangitis, is suggested as being a precursor of carcinoma. Other causes of chronic lymphangitis are syphilis pyogenic organisms, and chemical and thermal agents.

In describing the lymphatic drainage of the tongue Stacy calls attention to the fact that the drainage tracts may run across the midline and terminate in the cervical glands on the side opposite the lesion.

In the treatment of malignant lesions of the lip the author excises small growths surgically and subjects more extensive growths to interstitial irradiation. In all cases he performs a partial neck dissection several weeks after the use of radium removing the submental glands cleaning out the digastric triangle, and resecting a small portion of the bone of the mandible if the mass is attached to it. If the cervical metastases are inoperable he employs interstitial irradiation.

In the treatment of carcinoma of the tongue and floor of the mouth he has abandoned radium and radon because they favor necrosis of the mandible. For early cases he prefers diathermy or simple excision. For the control of pain, if this is necessary, he suggests nerve section. In cases of large, advanced, sloughing lesions, he attempts as complete removal as possible, using the diathermy knife with a cutting and coagulating current. The treatment of the local lesion is followed by removal of the gland bearing tissue of one or both sides. When there is bone involvement the mandible is also treated by diathermy. The affected portion is dehydrated and left to separate later as a sequestrum.

To reduce the danger of aspiration pneumonia, the author keeps the anesthesia minimal employs a suction apparatus throughout the operation and operates with the patient in the hanging head position.

LOUIS T. BYARS, M.D.

Montgomery M. L.: Congenital Fistulae of the Body of the Tongue. *Ann Surg* 1934, 6, 68.

Congenital fistulae of the tongue associated with developmental abnormalities of the thyroglossal duct are not uncommon but fistulae of the body of the tongue have been seen only rarely. In a review of the literature the author was able to find the reports of only two cases of fistulae of the latter type.

In the first of these cases there was a centrally located longitudinal fistula $\frac{1}{4}$ in. in diameter which extended forward through the median raphe of the tongue from the level of the foramen caecum to a point near the tip of the tongue and ended in a fibrous nodule the size of a hazelnut. This fistula had been asymptomatic.

In the second case there was a median transverse fistula which opened on the dorsum of the tongue at about the level of the junction of the anterior and medial thirds of the body, through the substance of which it passed to end blindly in a sublingual cyst. The cyst had been repeatedly incised and drained.

Montgomery adds a third case. The patient, a man, had noted for one year on the dorsum of the tongue a small growth which occasionally opened and discharged pus. Examination revealed a small papillary projection about 4 mm. high and 3 mm. in diameter on the dorsum of the body of the tongue. Near the apex of this projection there was an opening which admitted a probe. The probe could be passed through the dorsoventral thickness of the tongue and forward toward the symphysis of the mandible. The fistula appeared to terminate on the buccal surface of the mylohyoid muscle.

The author reviews the embryology of the tongue. The most recent work was that of Kallius published in 1910. This describes the development of the tongue from the fusion of one median and two lateral anlagen.

In the author's opinion the described fistulae of the tongue arise as deviations from the normal development of the body of the tongue as described by Kallius and are located in the fusion planes of the three anlagen.

LOUIS T. BYARS, M.D.

PHARYNX

Santi E.: Peripharyngeal Abscesses in Childhood (Gli ascessi perifaringei nell'infanzia). *Arch di chir infantile* 1934, 1, 175.

The author reviews 210 cases of peripharyngeal abscesses in children which were treated at the Children's Hospital Florence. In 6 cases the abscess was bilateral in 61 lateropharyngeal, and in 143 retropharyngeal. Of the retropharyngeal abscesses 70 occurred on the right side and 79 on the left. Ninety five of the children were less than one year of age. There were 4 deaths, a mortality of 1.9 per cent. Two of the deaths were due to bronchopneumonia and two to septicemia and cardiac syncope respectively.

The pathological anatomy and symptoms of peripharyngeal abscesses are discussed in detail.

The author recommends surgical intervention for all cases. He operates with the patient in the Rose position. He uses only a Kocher forceps as it prevents opening into large vessels, it is easier to use than other instruments, and the ragged opening it produces delays coagulation, thereby favoring more prolonged drainage.

GEORGE C. FIOLO, M.D.

Linck, A.: Simple Incision. Incision with Secondary Tonsillectomy and Abscess-Tonsillectomy in Cases of Paratonsillar Abscess (Einfache Incision, Incision und Sekundäre Tonsillektomie und Abscess-Tonsillektomie bei paratonsillären Abscessen). *Zusatz f. Laryngol. Rhinol.* 1934, xiv, 79.

The character of paratonsillar abscess is due to primary tonsillar and secondary paratonsillar factors. The pathological evolution of a paratonsillar abscess terminates in most cases in resolution, but in a few cases it results in a dormant residual abscess which may prevent also the healing of the tonsil containing dormant foci of infection. In the determination of the treatment indicated the most varied clinical pictures must be taken into consideration. It is easy to mistake a deep abscess for a phlegmon. The determination of complete healing is uncertain: neither palpation nor repeated puncture establishes it with certainty.

The aims of treatment should be evacuation and complete healing of the abscess and radical removal of the chronic tonsillitis. Simple incision of the abscess has, in addition to advantages, a number of great disadvantages. The latter include the possibility of complications, the remaining tonsil factor and the fact that possible neighboring abscesses or associated phlegmonous processes are not treated.

The two-stage method incision and secondary tonsillectomy, has all of the disadvantages of simple incision. Moreover the secondary operation is often neglected and estimation of the interval necessary is very difficult.

The combination of abscess incision and tonsillectomy in a single operation has many advantages: good exposure which eliminates the danger of leaving some of the abscesses unopened and prevents retention, erosion and the development of recurrences from incomplete healing of the abscess. However, these advantages are obtained only when total tonsillectomy is performed. The latter procedure removes the original focus in the tonsil. By this treatment the patient is freed of his disease at one operation. The disadvantages which have been attributed to the procedure has not been proved.

The author reports 180 cases treated by the method described. In no case were there any unfavorable sequelae. However in a few instances the progressing infection was not controlled. The after-treatment is simple, and there is less danger of hemorrhage. While the patient must remain in the hospital for ten days, the described method of treatment is economical because of the definite elimination of the disease process. The operation should be undertaken only by a specialist. The author be-

lieves that this prophylactic treatment deserves universal recognition.

F. STAMMERJON (Z)

Cappell, D. F.: On Lympho-Epithelioma of the Nasopharynx and Tonsils. *J. Path. & Bacteriol.* 1934, xxxix, 49.

Cappell reports on twelve cases of malignant disease of the nasopharynx, tonsils, and pharynx believed to have its origin in the specialized epithelium of the pharyngeal lymphoid tissues. He emphasizes the value of silver impregnation of the reticulum as a means of demonstrating the structure of such growths. He states that the tumors show distinctive clinical and pathological features and under the name of "lympho epithelioma" may justifiably be separated from other neoplasms.

Two main types of histological structure have been recognized: one corresponding to the classical lympho-epithelioma of Regaud and the other corresponding to the lympho-epithelioma of Schmincke. It is shown that these are not different types of neoplasm, but represent merely quantitative differences in the mode of growth and spread of the tumor cells. Evidence that the transitional-cell carcinoma of the nasopharynx and tonsil is a form of neoplasm different from lympho-epithelioma was not definitely established by the observations reported herewith, and it is believed that the two are at least closely related.

Lympho-epitheliomata are highly radiosensitive. The value of irradiation therapy as compared with surgical excision was clearly demonstrated in the author's cases.

SIMUEL KANG, M.D.

NECK

Dorrance, G. M.: Ligation of the Great Vessels of the Neck. *Ann. Surg.* 1934, lxix, 721.

The controversy as to whether the common carotid or the internal carotid artery should be ligated primarily had its origin in the cerebral complications which so frequently follow the obliteration of either one of the main carotid vessels. The symptoms occurring after ligation of either of these vessels include those of shock, low blood pressure, slowing of the pulse and cold sweat. The patient may experience a sense of faintness combined with nausea and vomiting, ringing in the ears, and darkening of the fields of vision. These may last for only a few seconds or may persist for days or weeks in association with homolateral headache, aphasia, and partial or complete contralateral hemiplegia. As a rule they tend to disappear, but many patients develop permanent hemiplegia, aphasia, blindness, and mental deterioration. In some cases the described symptoms are followed in a few minutes by slowing of the respiration, generalized convulsions, and death.

The author discusses five theories which have been advanced to explain the cerebral disturbances. These ascribe the disturbances to (1) anoxia resulting from failure of collateral circulation due

chiefly to anomalies of the circle of Willis (2) thrombosis and embolism, (3) ischemia resulting from vasoconstriction due to sympathetic irritation (4) circulatory stasis, and (5) intracerebral hemorrhage. Dorrance suggests that cerebral injury independent of the ligation may be responsible.

Attention is called to the importance in the regulation of the circulation of the brain of the web of nerve filaments in the walls of the carotid bifurcation which is called the 'carotid sinus'. Together with theortic nerves, these filaments have a depressive effect, thus acting as governors or counterbalancers of the sympathetic. They have therefore been termed the "buffer nerves" of the circulation. The cerebral complications of carotid ligations are those of vagus irritation rather than those of sympathetic stimulation. In producing "vasovagal syncope" by causing compression of the sinus or a rise of pressure within it, Lewis demonstrated that the vagus and carotid sinus mechanisms are intimately connected. The nerve terminals in the walls of the carotid sinus function as pressure receptors and as such are very sensitive to changes in intravascular pressures within the carotid and to extravascular pressures. Ligation of the internal carotid artery would obviously raise the pressure in the carotid sinus and tend to stimulate it. Many of the symptoms noted after such a ligation may well be due to this mechanism. On the other hand, ligation of the common carotid reduces the pressure in the sinus and thereby reduces its inhibitory effect.

From his review of the literature and his own experience the author draws the following conclusions:

1 Cerebral symptoms consequent to ligation of the carotid vessels are usually associated with and result from, sudden extreme reductions of systemic blood pressures. These reductions in blood pressures are produced by the reactions of the carotid sinus mechanism, and occur most frequently following ligation of the internal carotid artery.

2 A moderate percentage of complications are due to reduction in the volume flow of blood in the brain.

3 A small percentage may be due to thrombosis and embolism.

4 Intracranial arterial constriction due to stimulation of the cervical sympathetics does not play a part in the causation of these cerebral symptoms.

5 Ligation of the common carotid artery reduces the volume flow of blood in the internal carotid by only about 50 per cent.

6 Almost 50 per cent of the retrograde flow from the external carotid is derived from the superior thyroid.

7 Ligation of the common carotid is a much less hazardous procedure than ligation of the internal carotid.

8 Cerebral complications following carotid ligations may be lessened by

a. Ligation of the common carotid with subsequent ligation of the branches of the external trunk. If this is not enough the external trunk and the

internal trunk should be ligated consecutively, thereby avoiding primary ligation of the internal trunk.

b Careful observation of the blood pressure during the operation of ligation and prompt combating of marked persistent reductions of blood pressures with adrenalin or infusions or in anemic patients, by transfusion.

c The avoidance of factors which have been shown to influence the deposition of thrombi, such as compression of the artery before ligation and the use of clamps, fascial or metal bands and coarse or redoubled ligatures.

g. Primary ligation of the internal carotid is fraught with danger. Therefore primary ligation of the common carotid with later ligations, if necessary of the branches of the external carotid, should be adopted.

MAURICE MEYERS, M.D.

Weinstein A. A. Davis, D. Berlin D. D. and Blumgart, H. L.: The Mechanism of the Early Relief of Pain in Patients with Angina Pectoris and Congestive Failure After Total Ablation of the Normal Thyroid Gland. *Am J M Sc* 1934 clxxxvii, 753

Blumgart and his associates found that precordial distress was relieved within a few hours after total ablation of the thyroid. They performed this operation for angina pectoris, precordial pain other than angina, and hyperesthesia and hyperalgesia of the chest wall associated with various forms of chronic heart disease. In some cases the early relief was followed by a relapse, but complete and permanent relief was obtained in the course of several weeks when the metabolic rate fell to a permanently low level.

This article is based on twenty of fifty cases in which early relief was obtained.

The method of observation consisted of the precipitation of attacks under certain standardized conditions of exercise, tests of hyperesthesia and hyperalgesia by the application of cotton, pinching, scratching, pricking with a pin, and finger pressure and tests of muscle tenderness by pinching.

Postoperative sedation and general anesthesia were excluded as causes of the early relief. The relief of pain while the metabolic rate was still at the pre-operative level, the recurrence of the pain while the metabolic rate was still falling, and the complete cessation of the pain when the metabolic rate fell to a permanently low level suggested that the early relief is independent of thyroid action and due to the interruption of nervous pathways which normally carry afferent impulses from the heart to the cord. The authors concluded that if because of a cardiac lesion, excessive stimuli bombard a certain segment of the spinal cord, an irritable focus is produced in the nerve centers of the segment and normal afferent impulses from skin and muscle of the chest wall traversing this irritable segment become augmented. If the cardiac afferent pathways are interrupted the irritable focus subsides and the hyperesthesia and pain cease.

The author recommends surgical intervention for all cases. He operates with the patient in the Rose position. He uses only a Kocher forceps as it prevents opening into large vessels, it is easier to use than other instruments, and the ragged opening it produces delays cicatrization, thereby favoring more prolonged drainage. GEORGE C. FICOLA, M.D.

Linck, A. Simple Incision, Incision with Secondary Tonsillectomy and Abscess-Tonsillectomy in Cases of Paratonsillar Abscess (Einfache Incision, Incision und Sekundärer Tonsillektomie und Abscess-Tonsillektomie bei paratonsillären Abscessen). *Ztschr. f. Laryngol. Rhin. u. H.* 1934, xiv, 79.

The character of paratonsillar abscess is due to primary tonsillar and secondary paratonsillar factors. The pathological evolution of a paratonsillar abscess terminates in most cases in resolution, but in a few cases it results in a dormant residual abscess which may prevent also the healing of the tonsil containing dormant foci of infection. In the determination of the treatment indicated the most varied clinical pictures must be taken into consideration. It is easy to mistake a deep abscess for a phlegmon. The determination of complete healing is uncertain, neither palpation nor repeated puncture establishes it with certainty.

The sums of treatment should be evacuation and complete healing of the abscess and radical removal of the chronic tonsillitis. Simple incision of the abscess has, in addition to advantages, a number of great disadvantages. The latter include the possibility of complications, the remaining tonsil factor, and the fact that possible neighboring abscesses or associated phlegmonous processes are not treated.

The two-stage method, incision and secondary tonsillectomy, has all of the disadvantages of simple incision. Moreover the secondary operation is often neglected and estimation of the interval necessary is very difficult.

The combination of abscess incision and tonsillectomy in a single operation has many advantages: good exposure which eliminates the danger of leaving some of the abscesses unopened and prevents retention, erosion and the development of recurrences from incomplete healing of the abscess. However, these advantages are obtained only when total tonsillectomy is performed. The latter procedure removes the original focus in the tonsil. By this treatment the patient is freed of his disease at one operation. The disadvantages which have been attributed to the procedure have not been proved.

The author reports 130 cases treated by the method described. In no case were there any unfavorable sequelae. However in a few instances the progressing infection was not controlled. The after-treatment is simple and there is less danger of hemorrhage. While the patient must remain in the hospital for ten days, the described method of treatment is economical because of the definite elimination of the disease process. The operation should be undertaken only by a specialist. The author be-

lieves that this prophylactic treatment deserves universal recognition. F. STAUDENBERG (Z).

Cappell, D. F.: On Lympho-Epithelioma of the Nasopharynx and Tonsils. *J. Path. & Bacteriol.* 1934, xxxix, 49.

Cappell reports on twelve cases of malignant disease of the nasopharynx, tonsils, and pharynx believed to have its origin in the specialized epithelium of the pharyngeal lymphoid tissues. He emphasizes the value of silver impregnation of the reticulum as a means of demonstrating the structure of such growths. He states that the tumors show distinctive clinical and pathological features and under the name of "lympho-epithelioma" may justifiably be separated from other neoplasms.

Two main types of histological structure have been recognized: one corresponding to the classical lympho-epithelioma of Regnard and the other corresponding to the lympho-epithelioma of Schmincke. It is shown that these are not different types of neoplasms, but represent merely quantitative differences in the mode of growth and spread of the tumor cells. Evidence that the transitional-cell carcinoma of the nasopharynx and tonsil is a form of neoplasm different from lympho-epithelioma was not definitely established by the observations reported herewith, and it is believed that the two are at least closely related.

Lympho-epitheliomata are highly radiosensitive. The value of irradiation therapy as compared with surgical excision was clearly demonstrated in the author's cases. SAMUEL KURY, M.D.

NECK

Dorrance, G. M. Ligation of the Great Vessels of the Neck. *A. Surg.* 1934, xxix, 721.

The controversy as to whether the common carotid or the internal carotid artery should be ligated primarily had its origin in the cerebral complications which so frequently follow the obliteration of either one of the main carotid vessels. The symptoms occurring after ligation of either of these vessels include those of shock, low blood pressure, slowing of the pulse, and cold sweat. The patient may experience a sense of faintness combined with nausea and vomiting, ringing in the ears, and darkening of the fields of vision. These may last for only a few seconds or may persist for days or weeks in association with homolateral headache, aphasia, and partial or complete contralateral hemiplegia. As a rule they tend to disappear, but many patients develop permanent hemiplegia, aphasia, blindness, and mental deterioration. In some cases the described symptoms are followed in a few minutes by slowing of the respiration, generalized convulsions, and death.

The author discusses five theories which have been advanced to explain the cerebral disturbances. These ascribe the disturbances to (1) anemia resulting from failure of collateral circulation due

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS CRANIAL NERVES

Davidoff L. M. and Dyke C. G. Agnesia of the Corpus Callosum Its Diagnosis by Encephalography *Am J Roentgenol* 1934 xxi, 1

The authors review the embryological development of the corpus callosum and report three cases of agnesia of this body which were diagnosed by means of encephalography. In one case the diagnosis was confirmed by autopsy.

The essential changes found in the encephalograms were (1) marked separation of the lateral ventricles (2) angular dorsal margins of the lateral ventricles (3) concave medial borders of the lateral ventricles (4) dilatation of the caudal portions of the lateral ventricles (5) elongation of the inter-ventricular foramina (6) dorsal extension and dilatation of the third ventricle and (7) a radial arrangement of the mesial cerebral sulci around the roof of the third ventricle with extension through the zone usually occupied by the corpus callosum.

ROBERT ZOLLINGER, M.D.

Goode, J. V. Gunshot Wounds of the Head: An Analysis of 185 Cases. *Arch. Surg.* 1934, xlv, 16

In the 185 cases of gunshot wounds of the head which are reviewed by the author the mortality was 80.2 per cent. This is in marked contrast to the mortality of such wounds during the World War. In cases with puncture of the dura due to war wounds the mortality was about 35 per cent. The author's explanation of the difference is that the cases he reviews came for treatment much earlier than cases of war injury and that many soldiers with similar wounds died before they reached the army operating hospital.

Of 13 patients with gunshot wounds of the head in which the dura remained intact 4 had a skull fracture. One died from heart failure and the others recovered. The treatment consisted of débridement with primary suture.

Nine patients with laceration of the dura but no bullet fragment lodged in the brain recovered. Of these, 8 were treated by thorough débridement of the skin, bone and cortex and suture of the dura. In 1 case the dural defect was closed with fascia lata.

Of 40 patients with subcortical lodgment of the foreign body, 43 died. These patients were in extremely poor condition and only a few of them came to operation. In such cases operation should be preceded by roentgen examination and blood grouping. Thorough débridement of skin, muscle and bone should be done. A catheter should be used to irrigate and suck out devitalized brain tissue from the track of the bullet wound. In addition some surgeons

introduce the gloved finger once into the bullet track to locate fragments. The dura should then be closed with fine silk, and the galea and skin in turn closed with silk without drainage. Four of the patients whose cases are reviewed were re-examined. Two still harbored bullets in the brain but suffered no ill effects therefrom. Two had hemiplegia but this was improving under exercise.

Of 4 patients with through-and-through wounds penetrating the ventricles, all died.

Infection is greatly to be feared, especially when the patient is seen late. In cases of cerebrospinal rhinorrhea the prognosis is very unfavorable.

JOHN WILFRED EPTON, M.D.

Albert F. Basal Skull Fractures, an Experimental Study (A propos de fractures de la base du crâne. Étude expérimentale) *Rev. belge* 46, 1934, 97

The extremely variable prognosis of basal skull fractures has led to numerous studies of the mechanism of the effects of these injuries. Between the hopeless cases with irreparable cerebral lesions and the numerous benign cases in which recovery results without treatment there is a large series in which the outcome remains in doubt and the proper treatment is difficult to determine.

In an investigation of the origin of the fatal cerebral complications occurring in these cases the author carried out experiments on dogs in which he studied the effects of increased intracranial pressure with the use of a modification of the triple cannula method of Nolf. By this method simultaneous tracings were obtained from the central end of the femoral artery and the peripheral end of the vertebral artery. The respiratory movements were registered by a pneumograph. In this way the circulatory responses in the brain and in the general circulation were determined. The intracranial pressure was varied by injections of normal salt solution, paraffin oil and defibrinated blood into the ventricles or beneath the dura mater. From his findings the author draws the following conclusions:

1. To a slight intracranial hypertension the dog responds with a fall of both the general and the systemic arterial pressure. The pulse rate is increased and the respiration slowed. Section of the vagi abolishes the hypotension.

2. An acute high-grade intracranial hypertension produces an arterial hypertension both general and cerebral and bradycardia. Following division of the carotid sinuses extraordinary elevations in the arterial pressure occur.

3. By means of ergotamine the response to increased intracranial pressure can be abolished and the blood pressure reduced. As death occurs none

the less readily from respiratory failure. It is evident that the blood pressure is not an important factor provided there are no arterial lesions favoring cerebral hemorrhage.

4. The most serious effects of intracranial hypertension occur when there is a blocking of the normal circulation of the cerebrospinal fluid. This may be caused by fluid which is difficult to absorb or by clots. When it is due to the former the block is only relative.

5. Clinically and experimentally the only diagnostic sign of block is failure of the arterial pressure to fall following the removal of cerebrospinal fluid by lumbar or suboccipital puncture. When a block is present, puncture is useless as a therapeutic measure and should not be continued. In the absence of a block, puncture is a method of great value even in the presence of meningitis, resulting in cure in a high percentage of cases.

ALBERT F. DE GROOT, M.D.

Cohen, L.: Cerebral Complications of Putrid Pleuropulmonary Suppuration. *Arch. Neurol. & Psychiat.* 1934 XXXII, 74.

Abscess of the brain as a complication of suppurative conditions of the lungs and pleura has long been recognized. Why it is so infrequent in general septicemic states and so relatively frequent in suppurative pulmonary and pleural conditions is not definitely known. The more direct origin of the carotid arteries from the aorta has been suggested as an explanation, but seems scarcely adequate. The author reviews nineteen cases of pleuropulmonary suppuration with cerebral complications.

In five cases in which the diagnosis of brain abscess was proved and in two in which it was strongly presumptive, death resulted. The high mortality was due chiefly to the following factors: (1) early cerebral exploration necessitated by the precarious condition of the patient, (2) the depth of the abscess, and (3) the type of the infecting organism (mixed and multiple infections). As approximately 50 per cent of the metastatic abscesses are single lesions, surgical treatment should not be withheld. However, the operation should be done in two stages.

A certain number of patients present cerebral symptoms coming on more or less suddenly during or after some thoracic procedure. In such cases the diagnosis cannot be proved for if death results it occurs before sufficient time has elapsed for recognizable changes to occur in the brain. As recovery often results, the author believes that the symptoms are due to the lodgment of emboli in the brain.

An unusually high percentage of patients with pleuropulmonary suppuration show psychotic changes. While psychotic changes may develop as the result of long illness, in some cases they occur in the absence of prolonged blood loss or high fever. The author suggests that in cases of the latter type the cause may be an aseptic embolus or emboli lodging in the frontal lobe.

JOHN WILLIAM EYFON, M.D.

Toennle, W.: The Diagnosis and Treatment of Vascular Malformations and Tumors of the Brain (*Erkennung und Behandlung der Gefässmissbildungen und der Geschwülste des Gehirns*) 33 *Tag. d. deutsch. Ges. f. Chir.* Berlin, 1934.

This report is based on twenty-two cases of vascular malformations and tumors of the brain—sixteen treated at the Olivetree Clinic in Stockholm and six on the neurosurgical division of the Surgical Clinic of the University of Wuerzburg.

Hemangiomas of the brain may be divided into true tumors (angioblastomas) and malformations, which may be either venous or arteriovenous.

As the result of the work of the Swedish pathologist, Lundan in 1926 and the subsequent publications of Cushing, Bailey and Dandy it is now known that in cases of cystic angioblastomas of the cerebellum good results may be obtained from surgery. Tumors of this type are located almost exclusively in the cerebellar hemispheres. They consist of a cyst formed by transudation from a usually small mural tumor. Radical removal of the tumor is sufficient. As the neoplasm is almost always single, such removal may result in permanent cure. The familial occurrence and the simultaneous appearance of angiomas of the retina (von Hippel) or internal organs is well known. Cushing's material shows that these tumors are most frequent at middle and advanced age, whereas gliomas are most common in childhood and adolescence. Therefore in the posterior cranial fossa only neurofibroma of the acoustic nerve and the rare tumors of the cerebellopontine angle (meningiomas and cholesteatomas) occurring at the same time of life must be considered in the differential diagnosis.

It is worthy of note that the cystic angioblastomas only rarely cause the usual cerebellar symptoms. In the foreground is hydrocephalus internus occurrent with headache, vomiting, and later disturbances of gait.

While our views regarding venous malformations have changed only a little or not at all from those of Krause, von Eiselsberg, Perthes, Muehsam, Cushing, Bailey and Dandy interest in arteriovenous aneurisms has been re-awakened. Considerable information regarding the diagnosis and treatment of arteriovenous aneurisms has been gained especially from arteriography. On the basis of Dandy's description we are able to recognize the essential structure of an arteriovenous aneurism. The aneurism has its origin most frequently in the middle cerebral artery and less frequently in the anterior cerebral artery. In very rare cases there are also communications between the branches of the external carotid (middle meningeal and occipital arteries) and the cerebral veins. The size and extent of the arteriovenous fistula determine the external form of the angioma. Large fistulae usually result in a few very thick veins, whereas small fistulae not rarely result in numerous venous convolutions of small caliber. These facts indicate what can and what cannot be attempted in the treatment. The inevitable effect of

the ligation of a vein the thin wall of which is subjected to the action of the arterial blood pressure is rupture of the wall, as has been demonstrated by Cushing, Dandy, Olivecrona, and others. The only possible treatment is interruption of the arterial flow. Arteriography (Loehr, Moniz) is of great aid as it demonstrates before the operation not only the arteriovenous character of the tumor but also the number and position of the arteriovenous fistulae.

Among the cases reviewed by the author there were ten of arteriovenous aneurysm. In three of the latter the pressure was relieved, in two the internal carotid artery was ligated and in five, extirpation was done. Two of the patients became able to return to work. In four cases there was marked improvement in one case there was no change. In one case, the condition became aggravated and in two cases, death resulted.

In twenty cases of aneurysm treated surgically the immediate operative mortality was 15 per cent calculated on the basis of the number of cases and 15 per cent calculated on the basis of the number of operations. (2)

Pette H.: The Diagnosis of Brain Tumor with Reference to the Determination of the Indications for Surgical Interference (*Die Diagnose des Hirntumors im Hinblick auf die Indikationsstellung zur chirurgischen Vorgehen*) *München med. Wchschr.*, 1934, 4, 5

Brain surgery demands not only a highly developed technical ability but also exact diagnosis and early recognition of the indications for operation. The author presents a classification of brain tumors which is based on the fact demonstrated by experience that such neoplasms occur with greatest frequency at certain sites and at certain ages. Extracerebral tumors develop from (1) the meninges, (2) the cranial nerves, and (3) the hypophysis and epiphysis.

The author first discusses the meningioma which, because of their benign character grow only by displacement. The reported incidence of these neoplasms ranges from 11.3 to 19 per cent. Depending on the stage of development of the neoplasm the clinical picture shows the following three stages: (1) a latent stage without symptoms, (2) a stage with symptoms of beginning irritation and functional disturbance, and (3) a stage with symptoms of irreparable injury of the centers and tracts. In the last stage the roentgenogram sometimes shows atrophy of the adjacent bone of the skull but more frequently a tendency toward the formation of bone. The prognosis becomes more unfavorable the longer operation is delayed.

The neurinoma (acoustic tumor) grows slowly by displacement and is favorable for operative treatment.

Adenoma of the hypophysis (acromegaly) is anatomically benign and should always be treated first by roentgen irradiation. The very malignant tumors of the cranio-pharyngeal canal often form

cysts with calcium deposits and are easily demonstrable roentgenologically.

The author next discusses tumors which develop within the brain—gliomata, anglioblastomata, and metastatic carcinomata and sarcomata. All of these tumors have an infiltrating, destructive growth with resulting cerebral edema. The Bailey and Cushing classification of gliomata according to their morphological characteristics is no longer satisfactory to either the pathologist or the clinician as it does not include all types. The author discusses the different types. He divides gliomata into the benign and the malignant and emphasizes that the site as well as the histological structure of the tumor is important. He describes the symptoms of acute (malignant) glioma which sometimes causes death within from six to eight weeks. He states that in the differential diagnosis, abscess of the brain, encephalomalacia and tumor metastases must be ruled out. Because of the very unfavorable prognosis, the acute glioma should not be treated surgically. It can be treated only symptomatically. Death is the best possible cure as prolongation of life only prolongs the suffering.

The benign glioma occurs most frequently at about the age of thirty-three years whereas the malignant glioma is most common at about the age of forty-six years. The benign glioma grows very slowly and has a cortico-cerebral character. The occurrence of an epileptic attack during middle age should always suggest the presence of an insidiously growing neoplasm.

The malignant medulloblastoma is compared with the benign astrocytoma (gliomatous cyst). In doubtful cases trephination is necessary to confirm the diagnosis. A cystic tumor with xanthochromic contents is always an astrocytoma and should be removed radically.

The anglioblastoma of the posterior cranial fossa arising from an anlage is easily removed by surgery if it is recognized in time.

As a rule tumors arising within the cerebellum are not recognized until they have caused a hydrocephalus internus oclusus. They must be accurately localized in order to determine whether they should be approached surgically through the posterior cranial fossa or by way of the midbrain and tectum. In their diagnosis, the injection of 1 ccm of iodipin (Olivecrona, Antoni) or ventriculography should be considered. The author describes the technique of these procedures.

In conclusion, arteriography of the brain is discussed. HENKCHSEN (2)

Zollinger R., and Gross, R. E.: Traumatic Subdural Hematoma: An Explanation of the Late Onset of Pressure Symptoms. *J. Am. Med. Ass.* 1934, 44, 245

The authors report a case of bilateral subdural hematoma in which chemical studies were made and experiments were carried out to explain the characteristic late onset of the pressure symptoms.

Chemical analysis of the hematoma sac on the right side, which was removed first showed 8 gm of protein, 5.1 gm of globulin, 5.9 gm of albumin, 31 mgm of non-protein nitrogen, and 615 gm. of chlorine as sodium chloride per 100 c. cm. As the total protein in normal blood, the original contents of the sac, was 18.5 gm. per 100 c. cm. of blood, it appeared that the contents of the sac had been diluted about two and a quarter times.

In the contents of the sac of the left hematoma which was removed about three weeks later the total protein was found to be 6 gm. per 100 c. cm. This indicated a dilution of three times the original total protein content of the sac. These findings suggested that during the three week interval that the left hematoma was allowed to remain in place a further dilution of the contents of the sac took place.

The authors verified the work of Gardner which indicated that the hematoma sac acts as a semi-permeable membrane. Additional experiments were made to determine the comparative osmotic pressure effect of non-hemolyzed and hemolyzed blood in increasing the size of a hematoma sac. Oxalated whole blood was placed in cellophane tubing to which a glass capillary tube was tied. The cellophane tubing containing the blood was then submerged in normal saline solution. As the result of the difference in osmotic pressure the whole blood rose to the height of 165 cm. in the capillary tubing. When a small amount of saponin, a powerful hemolyzing agent, was added, the fluid rose to the height of 80 cm. This demonstrated a tremendous increase in the osmotic pressure of hemolyzed blood and suggested a possible explanation for the gradual increase in size of hematoma sacs.

The authors believe that there is a gradual breaking down of the red blood cells within the hematoma sac giving rise to a gradual increase of the osmotic tension within the sac over a period of months. Since the hematoma sac acts as a semi-permeable membrane fluid is gradually drawn into it, with a resulting increase in the size of the sac and a gradual rise in the intracranial pressure causing an increase in the clinical symptoms. The late onset of symptoms is therefore directly dependent on the slow disintegration of the red blood cells encapsulated within the hematoma membrane.

Gorodetskiy B. Diffuse Sarcomatosis of the Central Nervous System (Zur Frage der diffusen Sarkomatose des Zentralnervensystems) *Vorchr* (Arch. 1934, 11, 33)

The author gives a brief clinical and pathologic-anatomical description of a case of diffuse sarcomatosis of the central nervous system which he believes is the first to be recorded in the literature. The patient was a woman twenty six years old who developed symptoms of a brain tumor in the lower cranial fossa. The duration of the illness was three months. A decompressive trephination in the occipital region was followed by temporary improvement. Laminectomy performed two and a half

months later following a diagnosis of extramedullary spinal tumor disclosed a tumor-like thickening of the spinal cord between the fourth and ninth thoracic vertebrae, the upper borders of which could not be determined. Death occurred from cardiac insufficiency one and a half months after the operation.

Autopsy disclosed a diffuse sarcomatous tumor of the middle cerebellar lobe and the lower surface of the left hemisphere of the cerebellum which extended downward to the pia mater of the spinal cord and enveloped the latter like a capsule as far as the cauda equina. At different levels the capsule varied in thickness and was distributed irregularly around the cord. It was intimately connected with the capsule of the organ and could not be separated by blunt dissection. The spinal cord was distorted and irregularly flattened. In transverse sections its normal structure was distinctly recognizable only in the lumbar region. In the cervical and thoracic portions it was obliterated. The fibers of the cauda equina were also thickened.

Microscopic examination revealed a round-celled and spindle-celled sarcoma localized in the white spinal coverings and exhibiting an infiltrating, and, in places, destructive, growth. It compressed and penetrated the white substance of the cord and spread along the nerve roots. The tissue of the spinal cord was atrophic. Here and there were evidences of a disturbance of the circulation of the blood and of edema.

In summarizing the author states that the primary localization was the lower cranial fossa and that from there the neoplasm extended downward along the spinal coverings, producing the picture of *sarcomatous meningitis*. G. Aulov (2)

Maserman, J. H.: Effects of the Intravenous Administration of Hypertonic Solutions of Dextrose. *J. Am. M. Ass.* 1934, 10, 2084.

Patients between twenty and forty years of age and without clinically demonstrable organic disease were given hypertonic solutions of dextrose intravenously. The administration of 50 gm. or less of a 50 per cent solution caused no untoward clinical sequelae other than diuresis, whereas the administration of 100 gm. or more of a 35 to 50 per cent solution caused headache, backache, peripheral nerve pain, or pain in the injected vein in 75 per cent of the cases and the administration of 185 gm. or more was followed by a transient pyrexia in 58 per cent.

Contrary to previously published results of similar investigations, the arterial pressure and pulse rate showed no constant or significant effects.

After the intravenous injection of isotonic solutions there was a transient increase in the cerebrospinal fluid pressure, the duration of which was directly proportional to the amount of the solution injected and the height of which was proportional to the rate of the injection. No consistent secondary deviations were observed. When a hypertonic solution was used in an effective concentration (from 100 to 200 gm. of a 30 to 35 per cent solution) the

initial rise in the cerebrospinal fluid pressure was followed by a secondary fall which in turn was followed in an average of three hours by a tertiary increase to levels from 8 to 14.8 mm. of water above normal. The tertiary increase is of importance as an explanation of the late adverse effects sometimes observed in cases of intracranial hypertension treated by the intravenous injection of a hypertonic solution.

EDWARD I. PLATT, M.D.

Maes, J.: A Case of Ody's Operation (Observation d'opération d'Ody) *Bull. et mém. Soc. nat. de chir.*, 1934, 15, 832.

Tallhefer, A.: A Case of Suboccipital Transsection to Drainage—Ody's Operation (Une observation de drainage sousoccipital transsection—opération de F. Ody) *Bull. et mém. Soc. nat. de chir.*, 1934, 15, 832.

MAES reported a case in which, during the first forty-eight hours after a fracture of the left petrous bone, there were only diffuse neurological signs, predominantly signs of meningeal irritation such as agitation, mental confusion, generalized rigidity and a bilateral Babinski sign, and no changes occurred in the pupils, pulse or respiration. At the end of that time the patient was found in coma with respiration of the Cheyne-Stokes type and a pulse so rapid it could not be counted, signs indicating extreme compression of the medulla. Lumbar puncture yielded only a few drops of spinal fluid.

In this case there could be little doubt that there was a local pressure of fluid on the medulla and that posterior trephination was indicated. On section of the posterior arch of the atlas and incision of the dura mater a flood of liquid poured out and the patient was immediately relieved. Respiration became regular the pulse slowed and the cyanosis disappeared.

The case reported by TALLHEFER was that of a patient who presented diffuse neurological symptoms followed by the gradual development of signs of compression of the medulla—torpor, progressive mental confusion, and an increase in the bradycardia which had existed from the beginning. As in the case reported by Maes, Ody's operation resulted in prompt recovery.

In the discussion of these cases PETIT DUTAILLIS stated that when the medullary symptoms develop gradually it is possible that the cause is general rather than local—an intracranial hypertension caused by edema of the brain, obstruction by a clot in the foramen of Monro, the third ventricle, or the aqueduct of Sylvius, or compression by a hematoma. Under such circumstances trephination of the vertex would be indicated. The differentiation is very important. Ody recommended lumbar puncture and manometry for the differentiation, but PETIT DUTAILLIS recommends puncture of the ventricle. PETIT DUTAILLIS advocates also the use of rubber instead of gauze for drainage. He cited the fact that in the cases reported by Maes and Tallhefer the gauze caused retention with a temporary return of

the symptoms. He stated that there is apt to be an abundant secretion of fluid for the first few days and free drainage must be assured.

PROUST reported a case in which the arch of the atlas could not be found even with extreme hyperflexion of the head and it was therefore necessary to section the posterior arch of the axis. A satisfactory result was obtained. Proust believes that the lower section has some advantages.

In reply to Proust, PETIT DUTAILLIS said that he had never experienced any difficulty in resection of the posterior arch of the atlas, and that this is preferable to resection of the posterior arch of the axis because the blockade is at the level of the atlas.

AUDREY GOSWOLD MORGAN, M.D.

SPINAL CORD AND ITS COVERINGS

Lovett T.: The Pathogenesis of Anterior Poliomyelitis. A Review. *Internal Clin.* 1934, 11, 16.

The routes of infection in anterior poliomyelitis are (1) the nerve fibers, (2) the blood stream and (3) the lymphatics.

The occurrence of invasion by way of the nerve fibers is evidenced by the fact that injury to the nerve cells is one of the primary lesions in the central nervous system in anterior poliomyelitis, the fact that the sequence of infection follows known fiber pathways, the fact that the disease is produced most effectively in animals by intracerebral inoculation, and the fact that, irrespective of the method of inoculation used experimentally, there is predominant paralysis of the lower extremities and experimental transection of the spinal cord prevents involvement of the anterior horn cells of the lumbar cord, which is usually the portion affected.

Invasion by way of the blood stream is indicated by the following observations:

1. Early in the course of anterior poliomyelitis there is an acute interstitial meningitis which is most marked on the anterior surface and around the anterior fissure of the cord, where the vessels enter the cord from the meninges. This is believed to be due to the vascular involvement.

2. The disease may be transmitted experimentally by intravenous inoculation, and the virus passes through the cerebrospinal fluid. It has been shown that there is a rapid removal of the virus from the blood stream following its intravenous injection.

The evidence in support of the theory that the disease may result from invasion of the lymphatics is as follows:

1. The disease is accompanied by a general lymphatic hyperplasia which is especially marked in Peyer's patches.

2. It is analogous to cerebrospinal meningitis, in which the infection enters by way of the lymphatics of the olfactory nerves, passing through the cribriform plate to the meninges.

3. Experimentally it has been possible to demonstrate the virus in the cerebrospinal fluid although it does not remain there long. The fact that the

intrathecal administration of immune serum is of benefit supports the theory that the virus passes through the cerebrospinal fluid.

The author states that Fletner's theory regarding the transmission of the virus is more widely accepted than any other. According to Fletner the virus reaches the cord by passage or propagation along the lymphatics and the vascular system thus reaching the nervous elements, and because of the perivascular reaction, the anterior horn cells die of ischemia. There is considerable evidence that the nasopharynx is of importance as the portal of entry but there is little evidence to support the theory that the virus enters the body through the gastrointestinal tract.

ALTON OGDEN, M.D.

Abrahamson, L. McConnell, A. A., and Wilson
G. R. Acute Epidural Spinal Abscess. *Brit*
M J 1934, 4, 4

The epidural space between the dura mater and the perosteum lining the spinal canal is deepest in the upper dorsal and lower lumbar sections, absent over the cervical enlargement, and nearly absent over the lumbar swelling. Dandy stated that the space is absent ventrally but the findings of one of the authors of this article indicates that there is less adherence of the dura ventrally in the thoracic region than in other sections of the cord.

Dandy classifies the causes of epidural spinal abscess as (1) extension from a neighboring focus, and (2) metastatic infection from a distant source. In some cases no primary focus can be found. On account of the looseness of the areolar tissue the infection often spreads rapidly. Because of softening of the cord by toxic substances or interference with the blood supply the symptoms are out of all proportion to the compression caused by the abscess.

The diagnosis of epidural abscess is often difficult. Allen and Kahn state that the condition must be differentiated from poliomyelitis, leptomeningitis, tumor of the cord, and abscess of the cord.

The chief symptom is severe and persistent pain occurring first in the back and radiating to the lower limbs. There is often a latent period of from one to several days before the onset of motor symptoms, but occasionally complete paralysis occurs within a few hours. There may be stiffness of the neck, pain on movement and disturbances of sensation extending upward. The general septic symptoms are of variable severity. With the development of paralysis there is sphincter involvement. X-ray examination may be of no help unless osteomyelitis of a vertebra has been present for some time. Lumbar puncture may disclose pus or evidence of compression. Localization may be aided by X-ray examination following the intrathecal introduction of lipiodol.

The mortality of untreated epidural abscess is 100 per cent. Of sixty patients whose cases are reported in the literature, 30 were treated surgically. Twenty of the latter survived and many of them recovered completely.

The authors report a case of recovery following the removal of three laminæ. Interesting features of this case were:

1. Intense pain sometimes resisting morphine, which radiated around the trunk and was relieved by relieving the spine posteriorly.

2. Anterior nerve-root irritation manifested by sudden stiffening of the abdominal muscles.

3. The occurrence of only a slight loss of sensation instead of the usually marked anaesthesia.

4. A latent period of eight or nine days preceding the onset of paralysis.

Because of the successful result from drainage by the removal of only three laminæ the authors believe that extensive operations, which greatly increase the shock of surgical treatment, are usually unnecessary.

EDWARD S. PLATT, M.D.

PERIPHERAL NERVES

Davis, J. S., and Kitlowski, E. A.: Regeneration of Nerves in Skin Grafts and Skin Flaps. *Am J Surg* 1934, XLIV, 50

Davis and Kitlowski report their observations regarding the return of sensation in a large number of skin flaps and free skin grafts. They use the term "epicritic touch" to denote the sensation elicited by the use of a wisp of cotton applied so lightly that it does not depress the skin, and the term "protopathic pain" to denote the sensation of pain elicited by a pin prick applied carefully to avoid pressure. Heat and cold sensations were also tested. The authors point out that considerable difference of opinion is expressed in the literature with regard to the rate and order of the return of sensations to grafts. The subject is of importance because sensation is often essential to good function and the avoidance of injury and infection.

The flaps examined had their pedicles divided and set in. They are considered according to their anatomical region. The free grafts are classified according to type. Seven flaps were placed on the eyelids, nine on the nose, and fourteen on the cheeks, lips, and chin. These areas receive innervation from the trigeminal nerve, a purely sensory nerve. The flaps were taken from different locations such as the forehead, neck, and arm, and were set in various positions with regard to the lines of innervation. These factors made little difference in the speed of sensory recovery. Sensation did not return until after one month and then was noted to spread in from the periphery. Scarring delayed sensory return, especially when the flap was surrounded by keloidal or irradiated tissue.

In sixteen flaps applied to the wrist and hand the sensory return was found considerably slower than in flaps applied to the face. In all of six flaps placed on fingers because of X-ray or radium burns the entrance of sensation was delayed. Six flaps which were placed on the feet gained sensation most quickly from the lateral edges. Walking on these flaps caused callus formation which diminished sensation.

Neither the age of the patient nor the source of the flap influenced the return of sensation. Pain sensation began and advanced first. It was noted after about one month and advanced about 1 cm. a month. It was followed first by temperature sense and then by touch sense. The innervation was most rapid in areas supplied by purely sensory nerves, such as the trigeminal area. The entrance of the nerve fibers was slower when the surrounding skin was infiltrated by keloid, and slowest where the skin had been affected by X ray irradiation.

Tests made on twenty-eight free whole-thickness grafts showed that the time of entrance and the rate of advance of the nerve fibers was much slower than in flaps. An important factor was probably the removal of all nervous elements except those situated in the corium. Half thickness or split skin grafts were obtained by splitting the corium. In the eight cases in which they were used the rate of the return of sensation was much slower than in the full thickness grafts. Shrinkage of these grafts made it difficult to determine the rate. Pain did not begin until the seventh month. Its rate of advance was about 1 cm. in three months.

Most of the sensory end-organs are found deeper in the corium and hence are not included in Oiler Thiersch grafts. The nerves must enter from the surrounding skin into fibrous tissue covered by the thinnest of skin films. Therefore their progress is slow. Pain sensation begins at the eleventh or twelfth month and advances about 1 cm. in three months.

Small deep grafts were usually placed on granulating surfaces and hence were surrounded by scar tissue. The observed variations were so great in this group that no definite conclusions were possible. However the return of sensation appeared to be slightly faster in such grafts than in Thiersch grafts.

In all cases the return of sensation began at the periphery and advanced from the margin, and the speed of the return was determined largely by the number of nerve endings transplanted and the type of base upon which the graft or flap was placed.

THOMAS W. STEVENSON, JR. M.D.

SYMPATHETIC NERVES

Leriche, R. and Fontaine R.: Isolated Anesthesia of the Stellate Ganglion (*L'anesthésie isolée du ganglion étoilé*). *Presse méd. Par* 1934, xiii, 249.

In the course of the last nine years the authors have anesthetized the stellate ganglion alone in

more than 200 cases both for diagnostic and therapeutic purposes.

The patient lies on a table with a pillow under the nape of the neck and with his head turned away from the side on which the injection is to be made. A pliable platinum needle from 8 to 10 cm. long and with a diameter of $\frac{3}{16}$ mm. is inserted at the upper border of the middle of the clavicle and pushed in toward the transverse process of the seventh cervical vertebra. When this bone is reached the end of the syringe is raised until the needle glides down the width of a vertebra and is directed 30 degrees outward. At this point the needle enters the stellate ganglion. Ten cubic centimeters of a 1 per cent solution of novocain are sufficient for anesthesia.

When methylene blue is injected into the cadaver by the technique described the stellate ganglion is always colored blue. In the living subject the injection is followed in a few minutes by the Bernard Horner syndrome, which persists for from half an hour to several hours. It causes also an elevation of the temperature and vasodilatation of the homolateral half of the face. If these signs do not occur the injection has not been successful.

Occasionally the needle may enter the subclavian or vertebral artery but this does no harm. As soon as blood flows the needle should be withdrawn and inserted differently. The needle may also enter a foramen and penetrate the dura. When spinal fluid will flow out the injection should not be made. Another possibility is puncture of an emphysematous lung. This occurred in one of the authors' cases of asthma and resulted in a pneumothorax which persisted for several days. It may be avoided by making sure in cases of asthma, that the lung does not rise above its normal upper limit. Except for these possibilities the injections are absolutely harmless and may be repeated any number of times.

Anesthesia of the stellate ganglion is indicated for diagnostic purposes in all cases in which the sympathetic nature of the clinical syndrome is in doubt. It serves also to show what would be the effect of extirpation of the ganglion and thus establishes the surgical indications in asthma, angina pectoris, Raynaud's disease, and other vasomotor syndromes.

In addition it is effective in treatment. In some cases very severe attacks of asthma and angina pectoris have been arrested by its use. In cases of painful ataxia it stops the pain. The authors therefore no longer re-operate in such cases. After frequently repeated injections the pain often ceases permanently.

AUDREY Goss MORGAN M.D.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Moulouguet, P., and Roussel J: Bloody Discharges from the Nipple and Generalized Ectasia of the Galactophores (Ecoulements sanguins par le mamelon et ectasie généralisée des galactophores) *J de chir* 1934, XLII, 433

Since the report by Lecène and Galtier in 1928, attention has been directed especially to papillomata of the mammary ducts as a cause of bloody discharges from the nipple. However Lecène and Galtier pointed out that other conditions may produce such discharges, and that the cause next in importance to papillomata is dilatation of the ducts. The authors have collected seven cases of bloody discharge from the nipple due to dilatation of the ducts.

Clinically dilatation of the ducts is characterized by hemorrhage from several of the milk pores and absence of a cystic or solid tumor, whereas a duct papilloma causes bleeding from only one pore. On this difference Lecène based his operation of local excision. In dilatation of the ducts a serosanguinous or often a purely serous discharge can be expressed from the nipple. The discharge is intermittent and irregular. Axillary adenopathy is common. The ages of the women whose cases are reviewed by the authors ranged from twenty three to forty-six years.

Dilatation of milk ducts causing a bloody discharge from the nipple must be differentiated from carcinoma, Paget's disease, sarcoma, Reclus disease, angioma, and adenofibroma.

Pathologically the cases may be divided into two groups. In those of one group the acini are quiescent or atrophic and there are no other lesions such as epithelial hyperplasia or sclerosis of the stroma. However there is a superabundance of elastic tissue. In the authors' opinion the condition in these cases has the character of a congenital malformation. In the other group of cases the dilatation of the ducts is associated with activity of the acini and the histological appearance is that of a breast of pregnancy.

The treatment indicated in all cases is subcutaneous excision of the gland. The authors prefer a radial incision with preservation of the nipple and the shape of the breast. They close the dead space previously occupied by the gland by a series of pursestring sutures. *Lusier F de Grovt M D*

Taddei, A: A Case of Primary Ascending Intraductal Tuberculosis of the Breast (Un caso di tubercolosi primitiva canalicolare ascendente delle mammelle) *Clinica* 1934, X, 439

Primary ascending intraductal tuberculosis of the breast was first described by Velpeau and Raige-Delorme in 1836. It constitutes about one-half of 1

per cent of all lesions of the breast. Taddei reports the clinical data and microscopic findings in a case he observed in the Obstetricgynecological Clinic of the Royal University of Pisa. He states that the giant cells were of mesenchymal origin. There was no relationship of the condition to trauma or lactation.

The patient was a nullipara twenty-seven years of age who had noticed a lump in the breast which had become slightly larger but not harder and, for four months, had had a discharge of yellowish material from the nipple. Recently a fissure discharging a puriform material had developed in the nipple.

Except for the breast condition, the findings of physical examination were normal. Roentgen examination, however, disclosed a chronic pulmonary lesion. The involved breast was slightly enlarged. Near the nipple there was a rather hard nodule which blended with the breast tissue. From an opening in the nipple there exuded a purulent yellowish material which, when stained by the Ziehl-Nelson method, showed tubercle bacilli. There was no enlargement of the axillary nodes. Amputation of the breast with axillary dissection resulted in cure. *Eccorvz T Luzzo M D*

Dahl-Iversen, E.: Intramammary Angioma (L'angiome intramammaire) *Lyo chr* 1934, XXXI, 431.

Cutaneous and subcutaneous angiomas of the breast are not unusual, but intramammary angiomas are very rare. Intramammary angiomas may be diffuse or encapsulated. They either exist at birth or begin in the first few months of life and increase progressively sometimes with stationary periods of varying length. They are apt to grow very rapidly after trauma to the region.

The author reports a case of intramammary angioma in the right breast of a woman twenty-six years of age. The patient had never noticed anything abnormal in the breast until a month before she came to the hospital. She had nursed her only child for three months and had not noticed any difference in the secretion of the two breasts. For a month the right breast had been increasing in size. Otherwise it was normal. There was no retraction of the nipple, and the skin was normal, mobile, and not adherent to the gland. The gland was not adherent to the pectoralis. On closer examination and palpation the breast was found to be transformed into a soft nodular tumor. When the skin was stretched over the tumor the latter somewhat resembled a bunch of grapes, the nodules being about the size of grapes and bluish.

The tumor was extirpated under chloroform anesthesia. It was a diffuse cavernous angioma with

newly formed blood vessels both in the center and on the periphery and abundant smooth muscle in the tissue between the cavities. There was a prolongation extending into the axilla. No signs of malignancy were observed.

When angiomas of the breast are small and particularly when they are encapsulated, they may be extirpated. When they are large and diffuse the breast should be removed together with the surrounding fat and any prolongations of the tumor. If the nipple, areola, and skin are normal, they may be left intact for aesthetic reasons.

AUDREY GOSS MORGAN, M.D.

Salto, G., and Salghini, L.: Cystic Fibro-Adenoma of the Male Breast (Fibro-adenoma cistico della mammella maschile). *Rivista Italiana di Clinica e Terap.* 1934, 21, 536.

A case of fibro-adenoma in the breast of a man aged fifty three years is reported. The tumor was removed and the diagnosis confirmed histologically. The authors review the literature of tumors of the male breast and call attention to the difference in behavior of tumors of the breast in the male and female.

PETER A. ROSE, M.D.

Gatta, R.: Senile Involution of the Mammary Gland and Cystic Fibrosis (Involutione senile della ghiandola mammaria e fibrosi cistica). *Arch Ital di Chir.* 1934, xxxvi, 529.

The author reports a study of the mammary glands of women from the beginning of the menopause to extreme old age. His findings are shown by photomicrographs. He concludes that in senile involution of the mammary gland the fibrillary connective tissue gradually disappears and is replaced by adipose tissue. The involution has no fixed limits. It begins soon after the menopause and is not complete until extreme old age. At all ages the parenchyma shows proliferations in addition to regressive changes. The proliferations are particularly numerous soon after the menopause.

The dilatations of the alveoli and galactophorus ducts which occur after the menopause are to be attributed to a direct action of the epithelial cells and not to a sclerogenous action of the connective tissue. They are to be distinguished from stagnation cysts which are rare and due to a quite different cause. They are very numerous soon after the menopause and become fewer with the progress of the involution, disappearing entirely when the involution is complete.

Clear or eosinophile cells are found in the mammary gland after the menopause. They are derived from the normal cells of the gland and represent the final stage of their life.

The appearance of the mammary gland during involution resembles in some respects that of cystic fibrosis, but there are differences in the intensity of the proliferative processes which make it possible to distinguish between the two conditions.

AUDREY GOSS MORGAN, M.D.

Campbell, O. J.: The Relationship Between Cystic Disease of the Breast and Carcinoma. *Arch Surg.* 1934, xxviii, 1001.

The author classifies cystic disease of the breast as follows:

1. Simple cystic disease, in which epithelial activity is limited in degree or altogether absent.

2. Adenocystic disease in which epithelial hyperplasia forms a prominent part of the picture or dominates it. To designate the degree of hyperplasia the lesions are classified as of Grades 1 and 2.

Forty two authors, whose writings were reviewed held the view that cystic disease is a precancerous lesion and therefore a menace while 23 considered it a benign lesion with no causal relationship to cancer. Most of the former group based their conclusions on histological methods of research whereas the latter group based their judgment on clinical experience and follow-up methods of investigation. The histological evidence in favor of the theory that cystic disease is a precancerous lesion may be summarized as follows:

1. Cystic disease is frequently found in association with carcinoma.

2. Various gradations of epithelial proliferation in cystic disease may give the impression that there is a progressive evolution into carcinoma.

3. Tissue removed from breasts containing cystic disease frequently presents histological pictures which may be interpreted as representing early carcinoma.

Campbell states that in the use of histological methods alone contradictory interpretations may be made of the same microscopic picture. The lack of generally accepted diagnostic criteria for the differentiation of benign from malignant hyperplasia has resulted in the widest range of interpretations and probably explains the high incidence of malignancy in cystic disease reported by some observers.

The author believes that the behavior of the lesion over a period of years is a more accurate index of its nature than its histological appearance. Therefore his researches were directed along clinical as well as histological lines.

The conclusions presented are based on a study of 200 proved cases of cystic disease which were treated surgically. Of 133 which were treated by local excision, the condition was graded as simple cystic disease in 82 per cent as adenocystic disease of Grade 1 in 12.4 per cent, and as adenocystic disease of Grade 2 in 5.6 per cent. Of 57 cases which were treated by simple amputation, the condition was graded as simple cystic disease in 73.7 per cent, as adenocystic disease of Grade 1 in 14 per cent and as adenocystic disease of Grade 2 in 12.3 per cent.

The author's conclusions and recommendations may be summarized as follows:

1. Cystic disease is not a precancerous lesion the incidence of carcinoma following this condition being no higher than in normal breasts. The adenocystic form is no more dangerous than the simple cystic form.

2 Exploratory incision and frozen section followed by local excision and occasionally by amputation are recommended as affording maximum protection to the patient with minimal anatomical and functional loss.

3 All single solid tumors in women over twenty-five years of age should be removed for diagnosis.

4 Single small localized lesions, even though clinically characteristic of cystic disease are better examined by biopsy. Before the age of twenty-five years malignant tumors are so rare that in the absence of clinical signs of malignancy there is no need for operation or operation may be delayed.

5 While the presence of multiple tumors in one or both breasts is strong evidence that the process is benign, it is best to remove one or more of the most suspicious lesions if carcinoma is suspected clinically.

6 Cysts sufficiently large to be recognized clinically or by transillumination strongly indicate benignancy. However because of a number of reported cases in which carcinoma developed in the wall or in the immediate neighborhood of a cyst, excision of cysts of the single type is advisable. When the cysts are multiple, the risk involved does not warrant an extensive procedure or removal of the breast.

7 For cases of the diffuse form of cystic disease, the shotty or nodular breast, in which the greater part of one or both breasts is involved, close observation rather than operation is recommended. When one area in a diffuse process stands out more prominently or an area develops and becomes more prominent while the patient is under observation, exploratory operation and biopsy are indicated. The remainder of the breast is of no aid in the determination of the nature of the newly developing portion.

8 Bleeding from the nipple demands determination of the source of the blood and removal of the involved portion of the breast for diagnosis. In over 50 per cent of such cases the condition is benign. When the sources of bleeding are multiple removal of the breast may be necessary.

9 In the application of the principles mentioned, the age of the patient must be taken into consideration. In the cases of older women the period of function is past, the loss of the breast is of less importance, and the risk of cancer is greater. Therefore simple amputation is often justified, whereas in the cases of younger women local excision and biopsy may be the procedure of choice.

10 There can be no compromise with the dictum that radical operation should be done in all cases in which histological examination leaves the experienced pathologist in doubt.

The article has an extensive bibliography.

ANNEX S. W. TUCKER, M.D.

TRACHEA, LUNGS, AND PLEURA

Moolten, S. E.: Hodgkin's Disease of the Lung
Am J Cancer 1934, xii, 253

Moolten bases his interpretation of Hodgkin's disease on the morphogenesis of pulmonary lesions.

The morphological comparison of Hodgkin's disease in the lung with certain infectious granulomata of known etiology e.g. tuberculosis and actinomycosis, on the one hand, and tumors, including lymphosarcoma, on the other, provides a method of clarifying the position of Hodgkin's disease.

Examination of eight cases, which are reported in detail led Moolten to accept the theory that Hodgkin's disease is a primary inflammatory reaction of a granulomatous character rather than a neoplasm. He states that the lesion in the lung appears to permeate with ease such resistant structures as the walls of arteries and such delicate structures as the walls of alveoli. In both cases the direct result is, not mechanical compression and destruction, but uniform infiltration. The underlying framework is largely preserved. These observations support the theory that the spread of the disease is brought about by the diffusion of a virus or toxin which stimulates the proliferation of autochthonous mesenchymal elements. On the same basis it is possible to account for the numerous lesions of an entirely non-specific character existing side by side with well-defined specific lesions, which consist of catarrhal pneumonias and fibrinous exudate. The ultimate fate of such lesions is transformation into scar tissue.

Another indication of the inflammatory character of the disease is its behavior toward bronchial and alveolar epithelium. In contrast to neoplastic infiltrations, which tend to ulcerate, the lesions of Hodgkin's disease are characterized by their tendency to conserve or to stimulate the infiltrated bronchi. A similar tendency in relation to the alveoli is noted. In the exudative phase of the disease the epithelial cells which line the infiltrated alveolar septa proliferate in large numbers and are shed into the lumen. They appear as mononuclear and multinuclear phagocytic cells with a foamy cytoplasm, and are similar to those seen in various types of pneumonias and in tuberculous and actinomycotic lesions of the lung.

Despite the fact that the identity of the virus of Hodgkin's disease is not known, it is possible to surmise a few general features of its pathogenic nature from a comparative study of other granulomatous diseases such as tuberculosis and actinomycosis. All three diseases show varying degrees of productive and exudative response as well as necrosis and suppuration. In pulmonary tuberculosis and Hodgkin's disease the lesion is confined predominantly to the lung and lymph nodes. In actinomycosis the lymph nodes are rarely involved.

In Hodgkin's disease of the lung, as in tuberculosis and actinomycosis, the lesion seldom remains confined to the interstitial tissues but is complicated by a varying degree of parenchymatous involvement which may be characterized as a granulomatous or lobular pneumonia.

In all three diseases there is a specific bronchitis with catarrhal, ulcerative, cicatricial, and obliterative changes. Vascular lesions are also observed and, especially in the case of veins, are important foci of dissemination, from which a miliary tuberculosis,

actinomycosis or lymphogranulomatosis may develop
J. DANIEL WILLEMS, M.D.

Bonnot A., and Folx, J.: The Rational Indications for Phrenicectomy (Essai sur les indications rationnelles de la phrénicectomie) *Arch. méd.-chir. de l'appar. respir.*, 1934, ix, 81

Collapse therapy has been used in cases of pulmonary tuberculosis for about thirty years. In this extensive article the authors have attempted to correlate the physiological facts concerning diaphragmatic movement and innervation with the clinical problems involved in resection of the phrenic nerve. They have included a large amount of statistical material as well as eight graphs showing the course of pulmonary tuberculosis treated by phrenicectomy.

Except in rare instances the direct and constant result of the operation is immediate and complete paralysis of one half of the diaphragm with atrophy of the muscle. The permanence of the result depends to a great extent upon the length of the nerve segment excised. It is greatest when the segment exceeds 10 cm. The rise of the diaphragm is a good index of the result, but benefit may occur without an appreciable rise.

Figures are given for the increase of the pulse and respiratory rates, the diminution of the inspired air, the increase of blood circulating in the lung and the compensatory phenomena after phrenicectomy.

The resection is followed by immediate partial collapse of the healthy lobes due to their elasticity and a progressive collapse of the infected lobe due to retractibility made possible by the lessening of the elastic tension of the normal lobes.

Of eighty-eight patients followed for three years, good results were obtained in 39 per cent and unfavorable or no results in 34 per cent.

MARSH W. POOLE, M.D.

Longuet, Y. J. and Launay C.: Abdominal Complications of Phrenicectomy (Complications abdominales de la phrénicectomie) *Arch. méd.-chir. de l'appar. respir.*, 1934, ix, 157

It is necessary to expect disturbances of visceral function after phrenicectomy because of the tremendous rise of the diaphragm on the affected side.

When the resection is done on the left side it may be followed by epigastric pain, vomiting, precordial pain, or tachycardia, and at the time of the operation irregularity of the pulse and syncope may occur. The most logical explanation of these phenomena is that branches of the intercostal nerves anastomosing with the terminal branches of the phrenic nerve are injured.

Other possible sequelae of phrenicectomy are gastric and intestinal pain, indigestion, constipation, diarrhoea, difficulty in swallowing, duodenal stenosis and pseudo-appendicitis.

A careful study of the patient before phrenicectomy is done may show that in some cases the operation is contra-indicated by cardiac displacement, gastric ulcer or poor tonus.

Proper regulation of the diet may correct the symptoms if they are not severe but occasionally abdominal surgery is necessary.

MARSH W. POOLE, M.D.

Bonaccorsi A.: An Experimental Contribution to the Study of Aseptic Emboli in the Phrenicectomized and the Contralateral Lung (Contributo sperimentale allo studio dell'embolia asettica nel polmone frenicectomizzato ed in quello contralaterale) *Arch. ital. di chir.* 1934, xxxvi, 445

Bonaccorsi reports an investigation of the anatomical, functional, and roentgenological results of phrenicectomy and the relationship of the operation to the localization and pathology of embolic processes. In experiments on ten dogs a unilateral phrenicectomy was done and at various intervals there after an intravenous injection of bismuth subchloride in liquid vaseline was made in the territory of either the inferior or the superior vena cava. The dogs were killed at intervals of from two to sixty days after the injection.

With regard to the rise and mobility of the diaphragm after the phrenicectomy the results varied as the diaphragm on the side operated upon slowly descended and regained a degree of mobility thus attaining functional stability after a certain interval. The loss of tone and partial atrophy of the diaphragm connoted definite circulatory, lymphatic, and neurotrophic changes in the lung.

The site of origin of the embolus had no influence on the localization, diffusion, or gravity of the embolic process. Emboli were more numerous and the lesions following infarction more severe in the phrenicectomized lung.

The results of the embolic process produced by the suspension of bismuth in oil were varied and complex being characterized not only by hemorrhagic infarcts but also by necrobiotic foci. This is important in view of the great difficulty of producing ischaemic necrosis of the lung by means of emboli and demonstrates that, in addition to the embolic phenomena there were changes in the vascular endothelium which permitted diffusion of the bismuth and thus were responsible for the necrosis. Hemorrhagic infarcts were more in evidence in the early stages. Later they disappeared, leaving areas of emphysema. In addition, there were small foci of bronchopneumonia, minute abscesses, more or less extensive atelectasis, and zones of sclerosis containing pseudo-adenomatous formations. Fibrosis was more marked in the phrenicectomized lung.

The experiments are reported in detail and the article includes photomicrographs, roentgenograms, and a bibliography. M. E. MORSE, M.D.

Coryllos, P. N.: One Hundred and Seventy Cases of Thoracoplasty (367 Operations) for Pulmonary Tuberculosis Operated on from 1931 to 1933. *J. Thoracic Surg.*, 1934, iii, 441

Coryllos believes that when, in cases of pulmonary tuberculosis, a reasonably long bed rest has proved

that true cavities are present in the lungs and the cavities are located strictly in the apex, the treatment of choice is apical thoracoplasty. No other procedure is as likely to give such a high percentage of cures or to effect a cure in such a short space of time. In cases of more extensive lesions, pneumothorax supplemented, when necessary, by pneumolysis, is preferable because of the high mortality and the deformity resulting from thoracoplasty in such advanced cases.

Following a detailed description of his technique for thoracoplasty the author discusses the post-operative management, accidents and complications, air embolism, aspiration pneumonia, bronchopneumonia, wound infection, spread of the disease (autotuberculinization), hemoptyses, spontaneous pneumothorax, kinking of the bronchi, compression of large veins and the right heart, bronchiectasis, injury of the brachial plexus, failure to collapse cavities, persistence of a positive sputum, and post-operative deformities.

He emphasizes that in pulmonary tuberculosis it is not the size of the lesion but its nature which is the important element in the prognosis and in the choice of procedure and the time of operation.

In the 170 cases reviewed a cure was obtained in more than 80 per cent and the operative mortality was almost nil.

The principal causes of postoperative death are anoxemia, bronchial obstruction, and wound infection.

In conclusion the author emphasizes the necessity for close cooperation between pathologists and thoracic surgeons. J. DANIEL WILLIAMS, M.D.

Ascoli M. and Grassi, R.: *Clinicostatistical and Experimental Studies of Lung Abscesses* (Studi clinico-statistici e sperimentali sulle suppurazioni del polmone). *Palazzo Roma*, 1934, 2h, sez. chir. 289.

The authors report a study of 104 cases of abscesses and gangrene of the lungs. They state that there is no definite boundary line between the two conditions as all degrees of transition from the one to the other are found.

The most frequent cause of pulmonary abscess is lobar or lobular pneumonia. Of the cases reviewed, the abscess was due to this condition in 78.3 per cent. In 10.1 per cent it followed an operation, in 3 per cent it was secondary to a subphrenic abscess, in 6.2 per cent it was primary in the lung, and in 1.4 per cent it was caused by a foreign body. The authors believe that some of the abscesses classified as primary developed from bronchiectasis. Bronchiectasis is one of the most frequent causes of multiple abscesses.

By many postoperative pulmonary abscesses are attributed to emboli. Experiments performed by the authors on rabbits seemed to show that the lung infection is caused by bacteria commonly found in the mouth and pharynx. When tracheo-oesophageal fistulae were established in the experimental animals, lung complications developed quickly in every

instance and the bacteria found in the pulmonary exudates were the same as those in the pharynx.

Of the cases reviewed by the authors, the diagnosis was made during life in 91 per cent. Roentgen examination is a valuable diagnostic aid. Of 64 cases in which the results of roentgen examination were recorded, 17 showed a simple shadow, 5 a cavity with well-defined margins and a fluid level, and 72 a cavity containing fluid and air and infiltration of the parenchyma around the abscess. In all of the last group conservative treatment failed and operation was necessary. The prognosis is more favorable when the parenchyma around the abscess cavity is not very greatly changed.

In the reviewed cases which were treated within the first six months of the condition the mortality was 33.7 per cent, and in those treated later it was 61.3 per cent. Conservative medical treatment gives good results only in cases of acute central abscess opening into a large bronchus in which drainage is good and it is possible that recovery might occur spontaneously. Chronic abscesses cannot be cured by conservative treatment or by indirect surgical procedures such as the induction of pneumothorax and other collapse methods. In cases in which recovery has not resulted after from eight to twelve weeks surgical incision and drainage are indicated. This treatment should be carried out by the modern method of Sauerbruch and his school with pneumolysis and paraffin filling. At least 3 ribs should be resected for a distance of from 10 to 15 cm. to permit partial collapse of the chest wall. This is a very serious operation with a mortality of about 50 per cent, but it offers the only chance of cure in chronic cases.

In cases of multiple abscesses that cannot be drained by incision, resection of the lung has been performed. While the authors have had no experience with this method, they think it may give results better than those obtained heretofore in chronic abscess of the lung.

AUDREY GORE MORRIS, M.D.

Young, A.: *Primary Carcinoma of the Lung*. *A. S. Surg.* 1934, 4, 1.

The author reports a case of primary carcinoma of the upper lobe of the left lung which he treated successfully by lobectomy. Today two years after the operation, the patient is well.

The trap-door thoracotomy proved successful in every way. It gave excellent exposure and utmost freedom to the operative technique of removal. Young believes that, when practicable, individual ligation of entering arteries and returning veins is preferable to mass ligation of the stump as practiced by many surgeons. He doubts that it necessarily adds materially to the time required for the performance of the operation. The chief difficulty seems to arise in effective closure of the bronchus. This can readily enough be overcome by leaving a small portion of lung tissue and suturing it over the crushed, ligated, and inverted bronchial stump.

In the case reported the author removed the left eighth rib for drainage three weeks after the lobectomy. A month later he performed a thoracoplasty because of persistence of the drainage. Following the third operation there were no untoward effects. The patient left the hospital three months after the first operation. EARL O. LUTHER, M.D.

HEART AND PERICARDIUM

De Quervain, F. and Schuepbach, A.: Cicatricial Pericarditis and Its Surgical Treatment (Ueber schiedliche Perikarditis und ihre chirurgische Behandlung) *Schweiz. med. Wochenschr.* 1934, 1, 93

A sharp distinction must be made between concretio or synchia of the pericardium, which is a partial or total adhesion of the two leaves of the pericardium, and accretio, which is an adherence of the parietal leaf of the pericardium to neighboring structures. There is often a marked discrepancy between the anatomical findings and the functional disturbances. Therefore, in addition to the anatomical lesion, there must be other factors in the development of the condition. These may perhaps be the localization of the adhesions, their density, and their tendency to contract.

In cicatricial pericarditis there is always a severe disturbance of the circulation. In discussing the mechanism of this disturbance the author states that the capacity of the right auricle is greatly reduced by the walling in of the heart and this reduction causes congestion of the right heart. The congestion is further increased by constriction of the venae cavae at the point where they penetrate the pericardium. Thus the amount of blood thrown into the general circulation by each heart beat is diminished and there results the thready small pulse characteristic of cicatricial pericarditis. The congestion leads to marked enlargement of the liver with early ascites and congestion in every venous region. It is not unusual to find congestion also in the lesser circulatory system. In the young patient growth is very often markedly retarded and genital hypoplasia is a common finding.

In the diagnosis of concretio the most important symptom is the severe congestive phenomena with out explanatory cardiac findings. Other important findings are absence of the apex push and of communicated vibration of the chest wall over the region of the heart. Fluoroscopic demonstration of restriction of movement of the cardiac contour supports the diagnosis, but pericardial effusion must first be excluded. The diagnosis of cicatricial pericarditis is usually not difficult if there is no or only slight enlargement of the heart. When myocardial injury and heart failure are present in addition, the diagnosis is extremely difficult if not impossible. For the diagnosis of accretio retraction of the apex region during systole with protrusion of this region during diastole was formerly considered necessary but the importance of these signs was probably overestimated. Of much greater importance is the

demonstration of pleuropericardial and other adhesions. The displacement of the heart with changes of posture should always be determined by percussion and before the fluoroscopic screen. Roentgen kymography is an especially valuable aid in the roentgenological diagnosis especially of cicatricial pericarditis. It not only permits a qualitative diagnosis but assists considerably in the localization of the most important adhesions. The electrocardiogram does not seem to be of special aid in the recognition of cicatricial pericarditis, but is of value for estimation of the condition of the myocardium particularly when surgical intervention is considered.

In the majority of cases cicatricial pericarditis appears to be due to a polyserositis, usually of a tuberculous nature, in which the pericardial involvement is often so slight at first that it may be overlooked. Infectious rheumatic disease is of much less importance than tuberculosis in the causation of the condition. Cicatricial pericarditis occurs most frequently in children and adolescents.

Because of the mechanical cause of the severe circulatory disturbances medical treatment of the heart is useless. Diuretics and paracentesis have only a temporary effect. The only possible procedure is operative treatment—pericardiectomy or pericardiotomy.

Of the numerous incisions, the Fontane-Kocher incision for exposure of the heart appears best. This passes down near the left border of the sternum from the level of the second costal cartilage to the attachment of the sixth costal cartilage and then turns to the left paralleling the latter. When the pericardium has been thus exposed the surgeon must determine quickly whether the heart beats freely or if its labor is still difficult and weak. In the latter case a portion of the pericardium must be excised. In the excision it is most important for the knife to be carried into the proper stratum, i.e. the stratum of somewhat looser tissue representing the former pericardial cavity. Particularly over the left ventricle the incision must be carried deeply until the surgeon is certain that the heart muscle itself has been reached. Pericardioplasty is to be rejected.

In conclusion the author reports seven cases in detail. ZWIERG (2)

Flick, J. B. and Gibbon, J. H. Jr. Pericardiectomy for Advanced Pick's Disease. *Arch. Surg.* 1934, Vol. 126

The authors report a case of advanced Pick's disease in a boy twelve years of age. When the patient was three years old he developed a mass in the side of his neck from which pus was evacuated on incision. When he was seven years of age he became easily fatigued and his abdomen increased in size. At the age of ten, ascites became marked, the veins of the neck, arms and abdomen were prominent, and a diagnosis of cirrhosis of the liver was made. Frequent abdominal tapplings became necessary. At laparotomy in August 1931 a typical

thick, sugar-icing coating of the liver was found. On October 14, 1932 a diagnosis of Pick's disease was made. On November 21, 1932 pericardiectomy was done. The left third, fourth, fifth, sixth, and seventh costal cartilages and a portion of the left side of the sternum from the third to the sixth ribs were removed. The pericardium was found to be remarkably thickened and to contain calcareous plaques. Its anterior surface was resected, the left side being removed first, and a V-shaped strip was removed from the thickened diaphragmatic pericardium. Nine days after the operation the venous pressure was 17 cm. of water but on the twentieth day it rose to 25 cm. slightly above the pre-operative level. The patient died January 6, 1933.

At autopsy no evidence of obstruction of the superior or inferior vena cava could be demonstrated. The epicardium was found thickened and calcified. It could be stripped with comparative ease from the surface of the cardiac ventricle, from which it was separated by a layer of fat.

In commenting on this case the authors state that in children the persistent formation of ascitic fluid and dependent edema in the absence of obvious cardiac disease or impairment of renal function is highly suggestive of Pick's disease. The diagnosis is corroborated by low arterial and high venous pressures in the absence of valvular lesions.

In the case reported there was no evidence of tuberculosis or rheumatism, the etiology being therefore obscure. The authors ascribe the failure of the operation to the presence of the thickened calcified epicardium which was not removed. Two years before the operation the serum protein was 3.03 per cent and the albumin 1.14 per cent. The authors attribute these low values to malnutrition and believe that a low serum protein may be a factor in the production of edema and ascites.

ALTON OSGOOD, M.D.

Button, L. P.: Paracentesis of the Pericardium as a Therapeutic Measure. *Am J Dis Child* 1934, 43:11, 44.

On account of the relative fixation of the heart by the aorta and superior and inferior vena cavae an increase in the amount of pericardial fluid causes the pericardium to be distended in a posterior direction. The heart lies anteriorly and may produce an anterior friction rub even when very great pericardial effusion has occurred. As distention of the pericardial sac takes place, definite physical changes may be noted at the left base, namely an area of flatness below the angle of the left scapula, bronchial breathing in the same area, and bronchophony or egophony.

For the withdrawal of a pericardial effusion the author advocates the sitting posterior approach. He inserts a 10-cm. large-gauge needle through the sixth, seventh, or eighth interspace posteriorly at about the center of the area of bronchophony and bronchial breathing. A large-caliber needle is necessary as the fluid is usually thick and frequently bloody and it coagulates readily. Eleven cases with

definite improvement in the symptoms after each puncture are reported. In two cases the puncture wounds in the pericardial sac were checked at autopsy. This fact and the decrease in the pericardial shadow noted on fluoroscopic examination proved definitely that the pericardium and not the pleural cavity was aspirated.

The author states that the increase in the pericardial fluid is accompanied by a gradual rise in the blood pressure which is followed by a rapid fall terminating fatally. Pericardial paracentesis should therefore be performed before the blood pressure begins to fall.

G. DANIEL DELPRAT, M.D.

ESOPHAGUS AND MEDIASTINUM

Keefe, C. S.: The Pleural and Pulmonary Complications of Carcinoma of the Esophagus. *J. Nat. Med.* 1934, viii, 72.

Carcinoma of the esophagus may suggest a chronic pleural or pulmonary infection. This is usually the result of a perforation of the esophagus into the trachea, bronchi, mediastinum, lung, or pleura. In some cases food or fluid is aspirated into the air passages because of obstruction of the esophagus, or a necrotic lymph node, the site of metastases, perforates into both the lung and the esophagus, producing a fistula. In other cases, the trachea or bronchi may be obstructed by invasion of the tumor growth or by the pressure of enlarged lymph nodes which are the site of metastases. Under such circumstances the complications of tracheobronchial stenosis arise. Squamous-cell carcinoma of the esophagus frequently ulcerates and causes perforation. Adenocarcinoma of the esophagus ulcerates less often and produces obstructive symptoms earlier.

The author reports seventeen cases of carcinoma of the esophagus in which pleural or pulmonary complications were the outstanding features of the disease. He states that the symptoms and signs caused by these complications may completely dominate the clinical picture and overshadow the symptoms of the primary lesion.

EARL O. LATIMER, M.D.

Pfahler, G. E.: The Roentgen Diagnosis of Mediastinal Tumors and Their Differentiation. *Am J Roentgenol* 1934, xvi, 458.

This article is based on a review of 219 cases of abnormal mediastinal shadows which were believed to indicate tumor. The various factors to be determined in the diagnosis of mediastinal tumor are discussed and 3 cases of such tumors are reported with 9 roentgenograms.

The following conditions are considered sub-sternal thyroid, enlarged thymus, benign mediastinal tumors, dermoid cysts, diverticula of the pericardium, lipomata, fibromata, neuromata, aneurisms, primary malignant tumors (Haugensen's classification) metastatic malignant mediastinal tumors, small and large round-cell lymphosarcomata,

Hodgkin's disease (malignant lymphogranuloma) leukemic lymphoma leucosarcomatosis, carcinomata tuberculous and syphilitic lymphomata, actinomycosis, and mycosis fungoides. The author draws the following conclusions:

1 Roentgen examination yields the most important but not the only evidence of mediastinal tumor.

2 For differentiation the most thorough roentgenoscopic and roentgenographic study is necessary.

3 In doubtful cases a re-study made at a later date to note changes will be helpful.

4 Tumors of the lymphatic type and, to a lesser extent, carcinomata tend to disappear under irradiation. This fact serves to differentiate them from benign tumors and from aneurysms.

CARL R. STEINKE, M.D.

Hammarskjöld B: A Contribution to the Knowledge of Teratomata and Dermoids in the Anterior Mediastinum. *Acta radiol.*, 1934, XV, 210.

The author reports two cases of mediastinal teratoma in which a roentgen examination was made. In the first case, that of a man twenty-two years of age, there were metastases of chorionepithelioma in the lungs and brain. In the second case, that of a man twenty-eight years old the diagnosis was made at roentgen examination chiefly on the basis of experience gained in the first case.

The genesis and roentgenological diagnosis of teratomata are discussed. The author accepts Budde's modification of the theory of Dangachet and Bonnet, believing that the teratoma is not a twin structure but originates from blastomeres recently detached from the primitive intestinal cavity. This theory explains the occurrence of chorionepithelioma tissue in the first case he reports. As the blastomere is

multipotent before differentiation into the three germinal layers, it can give rise to any conceivable type of tissue.

With regard to the roentgen diagnosis, the author states that it is a mistake to place dermoid cysts and solid teratomata in the same class as the roentgen picture is extremely variable and only the dermoids are definitely characterized by sharply outlined smoothly rounded areas of density.

MISCELLANEOUS

Ehrlich, W., Ballon H. C. and Graham E. A. Superior Vena Caval Obstruction, with a Consideration of the Possible Relief of Symptoms by Mediastinal Decompression. *J. Thoracic Surg.* 1934, III, 352.

Following a review of the literature on obstruction of the superior vena cava—a condition which is by no means rare, the authors report two cases of their own in one of which the obstruction was due to a primary teratoma of the testis and in the other to Hodgkin's disease.

In the first case microscopic examination after autopsy showed complete occlusion of the superior vena cava by a thrombus and tumor tissue. Deep X-ray therapy and aspirations of large quantities of fluid from the pleural cavities had been of little avail.

In the second case, unsuccessful X-ray therapy was followed by an operation for mediastinal decompression which consisted in removing the right fourth and fifth costal cartilages and through this opening freeing the tumor in several directions and lifting it forward. After the operation the patient was practically free from the symptoms of vena caval obstruction.

J. DANIEL WILLIAMS, M.D.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Buddle, W.: Early Operation for Pneumococcus Peritonitis (Ueber die Fruchoperation der Pneumokokkenperitonitis). *Arch f Klin Chir* 1933, clxxviii, 308

The generalis of pneumococcus peritonitis is not uniform. The condition may originate from a circumscribed focus (genital tract or appendix), but there is also a so-called erytogenic form in children which differs from the former in its pathogenetic and therapeutic aspects as the locally circumscribed focus and the certainty of repeated escapes of infectious material therefrom necessitate different treatment.

The pneumococcus peritonitis of children occurs more frequently in girls than in boys. It develops suddenly with high fever, severe abdominal pains, and vomiting. Diarrhoea occurs nearly always at the beginning of the condition or soon thereafter. The child is apathetic and pale. Breathing is of the accelerated, superficial, costal type, and the pulse is small and markedly accelerated. Herpes labialis is often present. The abdomen is not so board-like and hard as in perforation peritonitis, but is everywhere tender to pressure and tympanitic and has a doughy soft resistance. The severity of the tenderness to pressure and the tension varies considerably at short intervals. The blood shows a high leucocytosis with displacement to the left. In the early stage the general condition presents the picture of a severe disease of a septic character with threatening general symptoms. The abdominal faeces is absent, but this is not a favorable sign as the abdominal faeces is due, not to peritonitis, but to intestinal paralysis, and in pneumococcus peritonitis the gut is not paralyzed primarily.

If the disease does not end fatally with the most severe septic symptoms the high fever sinks by lysis after a few days and at the same time the other symptoms become milder. The stage of primary shock lasts two or three days. The second or intermediate stage of diffuse peritonitis varies in duration. It is terminated by the onset of the third stage in which there is formed a more or less large encapsulated abdominal abscess or in mild cases, the peritoneal exudate becomes absorbed spontaneously. When an abscess is formed the temperature usually rises again in the form of remissions and a striking manitou-like general condition of prolonged duration (cachectic stage) results. If the patient is then left to himself spontaneous perforation of the abdominal empyema may result. As the abscess is usually located in the umbilical region or below this region with slight deviation to the right or less frequently to the left, the perforation usually occurs at the umbilicus. However it may occur

also into the intestine. If there is no opening and no perforation, the cachexia increases and may terminate in death. With a decrease in the power of resistance other localizations of the pneumococcus infection may result. As a rule the disease runs through all the three stages, but in some cases one or another stage is abortive.

Opinions still differ as to the portal of entry of the infection. It is possible that the peritoneal infection is caused by excreta which, in the presence of an enteric infection of the lower part of the ileum, enter the abdominal cavity from the intestinal lumen through the intestinal wall. Almost always there is diarrhoea with the passage of a thin, frequently blackish-green and usually foul-smelling fluid. At operation in the first or second stage the lower coils of the ileum and the parietal peritoneum show marked reddening. In spite of the enterogenic theory of the development of the condition, the genital route of infection cannot be left out of consideration. The possibility of a vulvitis produced by pneumococci must be borne in mind. The lymphatic and blood routes must also be considered. As a rule the peritoneum is to be regarded as the site of the primary localization because, in a large number of cases, the presence of a pneumococcus infection of the respiratory passages has not been demonstrated. Therefore pneumococcus peritonitis may be considered a general pneumococcus infection with its primary localization predominantly but not exclusively in the peritoneum. There may be also a secondary localization of the infection, a true metastasis. Organs which are known to be frequent sites of pneumococcus infections are always affected, viz. the middle ear, the lung, and the pleura. Reversely the peritoneum may become affected metastatically from a primary focus in the lungs. In cases in which the first two stages of a typical pneumococcus peritonitis have been survived without operation it is rare that the stage of encapsulation is not reached. The author reports a case of his own and another case in which encapsulation occurred in spite of early operation which was done because of an incorrect diagnosis.

Buddle's last seven cases were those of girls ranging in age from three to eleven years. Four were correctly diagnosed and treated conservatively. In three, operation was done in the stage of abscess and was followed by recovery. In the fourth case encapsulation did not occur. In three other cases the diagnosis was not made. One girl died after an exploratory laparotomy on the first day. The two others, who were operated upon on the fourth day, recovered.

Pure aerobic exudates, including pneumococcus puri, do not cause intestinal paralysis beginning in

the ganglia of the intestinal wall. When intestinal paralysis occurs in the presence of such exudates it is the end result of paralysis of the vasomotor center. Primary paralysis of the gut occurs with abundant anaerobic exudates and therefore in perforation peritonitis. The presence of aerobic protective and non-paralyzing exudates in the abdominal cavity is therefore not a definite indication for early operation. In order to determine whether a mixed infection is present in typical pneumococcus peritonitis, anaerobic cultures should also be made when foul-smelling pus is found. As there is a peritonitic exudate which does not primarily possess the properties of paralyzing the gut but, on the contrary contains protective substances which are important to overcome the infection and limit it to a locally circumscribed process, early operation does not come up for consideration at least not in the stage of the primary shock. Everything must be done to prevent further injury to the embarrassed circulation. Therefore, when the diagnosis is made with certainty in the first stage, most surgeons avoid operation. In doubtful cases, however an exploratory laparotomy must be done. Exploratory puncture and blood cultures do not always give definite indications. Of most importance is clinical experience. Drainage should be avoided also in exploratory laparotomy.

Recently polyvalent specific sera have been made. Their use in large doses seems to have a favorable effect but in the stage of shock is associated with the danger of serum disease and additional anaphylactic shock. Optochin has been especially recommended.

ERNEST HENRIK (Z)

GASTRO-INTESTINAL TRACT

Wallace H. L. and Werrill L. B. Congenital Hypertrophic Stenosis of the Pylorus *Bru M J* 1934 1: 1153.

An analysis was made of 145 cases of congenital hypertrophic stenosis of the pylorus treated at the Royal Edinburgh Hospital for Sick Children during the twelve-year period from 1923 to 1933 inclusive. In every case the diagnosis was confirmed at operation.

The ratio of males to females was 6:5. Fifty per cent of the patients were first children. The birth weight of the infants was somewhat higher than the normal average for males. The first symptom in the majority of cases was vomiting. This began after an average period of three weeks. Visible gastric peristalsis was an almost constant sign, whereas a palpable tumor in the pyloric region was noted before operation in only 24.1 per cent of the cases.

The operative mortality was 24.8 per cent. There was no decrease in the mortality during the last ten years. The children who failed to survive did not appear to differ significantly in condition at the time of operation from those who recovered. In many of the fatal cases the patient went into shock for no apparent reason and no adequate cause for death

could be discovered at autopsy. The time that elapsed between the first manifestation of obstruction and the admission of the patient to the hospital ranged from three to four weeks.

In conclusion the authors state that there is no evidence to show that pyloric stenosis in infancy is being recognized any earlier today than it was ten years ago.

SAMUEL J. F. JOHNSON M.D.

Meyer A: The Gastritis Problem (Das Gastritisproblem) *Klin Wchenschr* 1934, 1: 64

As yet very little is known about the bacteriology of gastritis. The author believes that infection is of more importance in the development of the condition than faults of diet. He states that dyspeptic manifestations in febrile patients are caused by a hematogenous gastritis. More frequent is infection of the gastric mucosa by ordinary intestinal bacteria which is favored by reduction of the hydrochloric acid secretion. When the secretion of hydrochloric acid is impaired it is possible also that microorganisms colonize near the stomach—in the gall bladder for example—and repeatedly invade the stomach from there. In addition, there is the possibility that relatively acid resistant bacteria remain in the gastric mucosa for a long time.

As the author has stated before, the *Odium albicans* is of special importance in the development of ulcer gastritis and gastroduodenal ulcer. He first found this to be true in single clinical cases of acid gastritis. Later he obtained pure cultures of *Odium albicans* in the contents of the fasting stomach and the duodenal fluid in numerous cases of chronic gastritis and gastro-enteritis. The *Odium albicans* can thrive also when the secretion of hydrochloric acid is normal, whereas intestinal organisms can develop only in the presence of subacidity or acidity. The fungi are not absolutely resistant to the degrees of acidity occurring in the stomach, but when once they have invaded the tissues, they find themselves in an environment where they can live. The *Odium albicans* on the one hand and the enterococci on the other are considered causes of gastritis either acid or anacid.

It is possible also that constitutional factors may play a rôle in susceptibility to a certain causative agent. The author discusses disturbances of physiological correlations of a motor and secretory character as etiological factors in the development of gastritis also the weak stomach and the question as to whether an anacid gastritis may not be preceded by a hyperacid stage.

Chronic gastritis is of importance not only because of its prolonged course during which the efficiency and comfort of the patient are markedly distributed, but also because of its complications.

In addition to gastric ulcer which is one result of gastritis, carcinoma must be mentioned as a late sequel. Benign pyloric stenosis also follows gastritis, as investigations have shown. Secondary pellagra following gastritis as the result of local complications or extreme limitation of the diet is

seen especially in America. The author has observed a case of this condition associated with benign pyloric stenosis.

Bowel involvement is common not only in anacid, but also in acid, gastritis. Its manifestations include periodic diarrhoea, tenderness to pressure to the right and left of the umbilicus, rapid passage of contrast material through the small intestine, fatty stools, and icterus.

Anemia is a very frequent complication of chronic gastro-enteritis with anacidity and even with normal acidity. As a rule it is a hypochromic anemia with leucopenia, but in some cases pernicious anemia may develop.

In the most severe cases of chronic gastro-enteritis with all of the symptoms mentioned (fermentation and fatty stools, anemia, avitaminosis, and cachexia resulting from the chronic diarrhoea) the syndrome resembles most closely that of tropical sprue.

The treatment of gastritis has always been influenced by the prevailing theories regarding the causes of the condition. Formerly, astringents were used. Later in the belief that the gastric hydrochloric acid was harmful, alkalies were preferred. Today drugs to combat inflammation of the mucous membrane (silver nitrate, protargol, and tannin silver preparations) are employed. The author has investigated the various remedies with regard to their antibacterial effect which he believes is of more importance than their astringent action. He found that when the mucous membrane is normal silver nitrate causes a marked increase of secretion, whereas in chronic gastritis it greatly reduces secretion.

Under the influence of the previously generally accepted theory regarding the etiological importance of hydrochloric acid, the use of silver nitrate was considered inadvisable in clinical cases. Today we know that gastric ulcer is always associated with a gastritis, and that in the presence of inflammation an increase of the hydrochloric acid secretion can have only a favorable influence. Bismuth subnitrate and bismuth subcarbonate are effective chiefly because of their absorbing capacity. Their effect is surpassed by that of animal charcoal and to a less extent by that of kaolin and neutralon.

Magnesium hydroxide, which is used so frequently may perhaps have both an absorbing and an antiseptic effect. The good effect of silver nitrate in acid gastritis seems to be counterbalanced by the disadvantage of the development of argyrosis after prolonged use of this remedy. KOSKINEN (2).

Burger, O., and Hartfall, S. J.: Hematemesis in Peptic Ulcer. *G. v. Hosp. Rep.* Lond. 934, 1939, 197.

Of the 101,055 cases admitted to the medical and surgical wards of Guy's Hospital, London, during the period from 1921 to 1930, a diagnosis of peptic ulcer was made in 1,145. Hematemesis occurred in 177 cases. In 137 (77.4 per cent) it was due to peptic ulcer.

The number of deaths in the 137 cases of haematemesis due to peptic ulcer was 31, a mortality of 22.6 per cent. In the majority of the cases the patient was admitted to the hospital for haematemesis occurring on the day of admission. Of the 39 who were in shock, 7 died, of the 86 who were in fair condition, 18 died and of the 22 who were in good condition, 6 died. The patient's condition at the time of admission to the hospital gave no indication of the subsequent progress of the case.

In 78 (58.4 per cent) of the cases the bleeding recurred after the patient's admission to the hospital. Two of the patients were admitted twice. In these 78 cases there were 26 deaths, a mortality of 33.3 per cent. This confirms the conclusion of others that recurrence of haematemesis is a most unfavorable sign.

Sixty-three transfusions were given to 38 patients. Of this group, nineteen (50 per cent) died. The quantity of blood given ranged from 3½ to 30 oz. Immediate transfusion was given to 6 patients, all of whom died. Of 3 patients given immediate and delayed transfusions, 2 died and 1 recovered.

Seventeen of the 137 patients had had previous surgical treatment and 20 were operated upon following their admission to the hospital. Of 5 patients with bleeding after the operation for ulcer all died. Of 5 operated upon at various intervals for haematemesis, 8 died. The surviving 7 were operated upon after medical treatment for from one month to a year. In the 20 cases in which operation was performed there were 13 deaths, a mortality of 65 per cent. All of the patients operated upon within ten days after the bleeding died. These facts suggest that early surgical intervention is justified only rarely and in only very carefully selected cases.

SUMNER J. FOOTE, JR., M.D.

Bendandi, G.: Neurinoma of the Stomach (Contributo alla conoscenza del neurinoma dello stomaco). *1aa. Ital. di chir.* 934, VII, 247.

According to most statistics, benign tumors of the stomach are relatively uncommon, constituting only from 1 to 2 per cent of all gastric tumors. They may originate from any of the tissues of the stomach or from aberrant tissue in the stomach wall. Benign tumors originating from the nerve tissue are the least common.

The author reports a case of neurinoma of the stomach in a woman twenty nine years of age. The clinical syndrome consisted essentially of three hemorrhages from the stomach. Two years after the last attack, when the patient was apparently in a normal state of health she was subjected to a routine fluoroscopic examination. This revealed a rounded filling defect in the center of the lesser curvature of the stomach. The emptying time of the stomach and the findings of all other tests were normal.

At laparotomy a tumor the size of a hen's egg and weighing 55 gm. was resected. The mucosal covering was bright red except for two scars. The surfaces of sections of the mass showed zones of tissue involved

by hemorrhage next to relatively compact tissue of a whitish hue. The portion of the tissue involved by hemorrhage was spongy. A dense capsule encircled the mass. The serosa of the stomach was normal.

The findings of histological examination of the tumor are described in detail and shown by photomicrographs. There were three characteristic changes: (1) nuclei arranged parallel on a thin layer of connective tissue which formed an unusual palisade-like structure; (2) masses of nuclei forming fan-like and vortex-like figures; and (3) zones of microcystic degeneration and other myxomatous changes. Considerable vascular dilatation and cellular infiltration were also present.

The author tabulates the principal characteristics of twenty five similar cases which he found in a review of the literature and on the basis of these cases and his own case discusses the frequency, sex incidence, location, size, and symptoms of gastric neurinoma. As is true of most benign tumors the clinical symptoms of gastric neurinoma depend upon the complications.

Bendandi suggests classifying gastric neurinoma as follows:

1. Extragastric, pedunculated, without gastric symptoms.
2. Intragastric (a) pedunculated with or without symptoms (b) intramural.

A. Louis Rossi, M.D.

Ronzini M: The Place of Neurinoma Among Benign Gastric Tumors (I neurinomi nel quadro dei tumori gastrici benigni) *Arch. ital. di chir.* 1934, xxxvi, 1.

The author first gives a general review of benign tumors of the stomach and then lists chronologically those reported between 1925 and 1932. At the end of 1932 the total number reported was 1,092. Ronzini next discusses the nature and anatomical characteristics of neurinoma in general. From the literature through 1932 he collected 56 cases of tumors diagnosed as gastric neurinoma. He presents these in a table. The first case was reported by Picquet in 1912. Since then there has been a progressive annual increase in the number of reports. In the year 1931-1932 neurinoma were second in frequency among benign gastric tumors, being exceeded only by polyps. This fact demonstrates that ideas concerning benign tumors of the stomach have recently undergone revision. The previously assumed rarity of neurinoma was due to the fact that formerly these tumors were usually mistaken for fusiform sarcoma.

On the basis of the reported cases Ronzini discusses the pathology, symptoms, diagnosis, roentgenological aspects, operative treatment and prognosis of neurinoma of the stomach. He states that as these tumors are practically always benign, their surgical treatment should be conservative. The only tumors having the same appearance are gastric sarcoma, which are rare in comparison with neurinoma. In cases of pedunculated forms of neurinoma,

simple removal if practicable is the basic indication. Only in cases of the sessile variety, those with associated ulceration of the mucosa and those in which enucleation proves difficult is resection necessary. The only case treated by roentgen irradiation which Ronzini was able to find in the literature was reported by Carnot in 1928. In this case deep roentgen irradiation was given for a growth in the lesser peritoneal cavity which was only partially removable. The patient remained clinically well at the end of five years.

Ronzini reports a case in which he removed a typical pedunculated exogastric neurinoma weighing 1,500 gm. The patient, a woman forty-two years old, had first noticed the presence of the tumor seven years previously. Three years before the operation she had had repeated hematemesis, but at the time of the operation her only symptom was occasional abdominal pain following exertion. Histologically the tumor presented characteristics pathognomonic of neurinoma: palisade and fan arrangements of the cells and the peculiar reaction of the basic fibrillar substance to Van Gieson's stain.

The article contains 20 illustrations and is followed by a bibliography of 300 references which may be considered complete for gastric neurinoma through 1932 and for all benign gastric tumors for the period from 1925 to 1932 inclusive.

M. E. Moroz, M.D.

Anardi, T. Malignant Connective Tissue Tumors of the Stomach (Sui tumori connettivi maligni dello stomaco) *Ann. ital. di chir.*, 1934, xlii, 287.

In a review of the literature the author was impressed by the infrequency of gastric sarcoma as compared with carcinoma and the uncertainty and differences of opinion regarding its clinical signs, pathogenesis, and anatomicopathological characteristics.

He reports in detail a case of lymphosarcoma and a case of tumor of the endothelioma type. On the basis of a thorough study of these two cases and a review of numerous cases reported in the literature he suggests classifying malignant connective tissue tumors of the stomach according to their origin from the embryonic mesenchymal cell as follows: small and large round-cell sarcoma, lymphoblastoma, fibroblastoma, endothelioma, angiomatoma, fibromatoma, myxomatoma, myomatoma, and lipomatoma.

A. Louis Rossi, M.D.

Stewart, W. H. and Illick, H. E.: The Roentgen Diagnosis of Carcinoma of the Cardia. *Am. J. Roentgenol.* 1934, xxxiv, 43.

Carcinoma of the cardia is much more frequent than is commonly believed. Every case with clinical findings suggesting such a lesion should be carefully studied roentgenologically by a careful technique. Multiple examinations with the use of various modifications of technique may often aid in the differentiation of lesions. The roentgen findings must be

correlated with the clinical history and other findings.

The authors describe the following ten roentgen signs of carcinoma of the cardiac portion of the stomach: (1) dilatation of the lower oesophagus, (2) abnormal retention of barium in the lower oesophagus, (3) the passage of the barium through the oesophageal orifice in a continuous stream, (4) narrowing of the oesophagus and unchanging canalization through the tumor, (5) infiltration preventing normal movements of the lower oesophagus, (6) a mass visible in a gas bubble, (7) a mass visible after the first swallow of barium and after distention of the stomach by the full meal, (8) forking of the barium over a mass, (9) gastric hypermotility and (10) oesophageal antiperistalsis.

The most important conditions to be differentiated are cardiospasm, diverticulum of the lower oesophagus, varices, extrinsic lesions producing pressure on the oesophagus and cardia, hernia of the diaphragm, ulcers involving the lower oesophagus and cardia and adhesions.

The treatment, which is surgical, has been greatly improved since the advent of thoracic surgery.

E. E. BARRA, M.D.

Memmi, R.: Primary Sarcoma of the Stomach (Il sarcoma primitivo dello stomaco). *Falci* Rome, 1934, 11, sez. chir. 307.

Primary sarcoma of the stomach is rare. While about 300 cases have been recorded in the literature, Ewing believes that in many of them the diagnosis was incorrect.

The author reports 2 cases in which, he believes, the diagnosis was established beyond doubt. In both there was an ulcerated vegetating tumor of the lesser curvature. In the first case, that of a man seventy-two years of age, metastases were formed in the liver. The second case was that of a woman fifty-seven years of age. In the first case microscopic examination of the tumor disclosed spindle cells almost exclusively. In the second it showed polymorphous, predominantly large round cells and some giant cells. In both cases the connective tissue nature of the cells, their method of growth, and their relation to the blood vessels and surrounding tissues were typical of sarcoma. The microscopic findings are reported in detail with photomicrographs.

ARNOLD GOSWAMI, M.D.

Moutier, F.: Endoscopic Study of Gastro-Enterostomy (Etude endoscopique de la gastro-entérostomie). *Presse méd.* Par. 1934, 42, 653.

In twenty-six cases in which gastro-enterostomy had been done from three to twenty months previously the author made an endoscopic study to determine the cause of the complaints which so frequently follow that operation. In four the gastro-enterostomy was done for gastric ulcer. In nineteen, for duodenal ulcer in one for a stenosing periduodenitis. In one, for gastric stoma with retention and in one, for antral neoplasm.

Endoscopic examination following gastro-enterostomy is difficult because insufflation of the stomach with air is often poorly tolerated. Not only the shape but also the capacity of the stomach is changed. Orientation is usually difficult because the stomach is twisted. There is a change in its longitudinal axis as well as in the shape of the antrum due to the distortion of the position of the posterior wall by the operation. The effect of the twisting of the stomach is further distortion of the very important longitudinal folds which are essential for orientation. The distortion of the entire stomach may be so pronounced that the posterior gastric wall passes the median line and the gastro-enterostomy stoma appears to be on the anterior wall. The pylorus may or may not be visible, or may be seen in the same field as the gastro-enterostomy stoma. There may be a sacculization of the greater curvature which may cover and obstruct the view of the gastro-enterostomy stoma. The gastro-enterostomy stoma may be so changed in shape that it may be mistaken for the closed pylorus. Invagination of the jejunum through the gastro-enterostomy stoma may increase the distortion of the picture. An associated perigastritis and retraction of the mesentery with traction on the antrum leads to further diminution of the size of the already reduced antrum.

The contents of the stomach after gastro-enterostomy vary. The stomach may be empty or may contain bile, blood, or mucus. When once orientation in the stomach is obtained the gastro-enterostomy stoma should be localized. This may be very difficult not only because of the reasons cited but also because the stoma may not be found where it was localized previously at X-ray examination. Bile or gas exuding from it may aid in its localization.

In some cases there may be found a non-ulcerative gastritis characterized by marked hypertrophy of the mucosal folds with deep troughs between them and abnormally broad crests. This mucosal hypertrophy may progress until the classical "état mamelonné" results. There is usually a marked congestion of the mucosa and there may be small patches of mucus which progress to an extensive myxotheca. The process may advance to the inflammatory condition described by Konjetzny and continue until there is found first, a superficial erosion and later a true erosion. The ulceration may be at the new stoma or elsewhere, or the original ulcer may be still active.

Symptoms following gastro-enterostomy may therefore be due to new pathological changes, persistence of the old lesions, or mechanical malfunction of the gastro-enterostomy stoma. The latter may be due to faulty placing, too small size or distal stenosis of the stoma, herniation of the small bowel into the stoma, peri-stomal inflammatory swelling or peri-stomal adhesions.

The author concludes that the high incidence of gastrojejunal symptoms following gastro-enterostomy is due to spread of the inflammatory process from the tissues in which the operation is performed,

which is favored by the surgical intervention, and to the fact that the operation is not physiological. He states that when no pathological changes are seen on endoscopic examination, it may be assumed that the symptoms are of neuropathic origin.

SAMUEL J. FOGELSON, M.D.

Best, R. R. and Bowers, W. F.: Anterior Hemipylorotomy for Aberrant Pancreatic Tissue of the Duodenum—Diagnostic Difficulties. *Ann Surg* 1934, xciv, 957.

The authors review the historical embryological and anatomical development of aberrant pancreatic tissue in the duodenum discuss the theories of origin and report in detail two cases in which an anterior hemipylorotomy was done with removal of a tumor of aberrant pancreatic tissue. They emphasize that aberrant pancreatic tissue is usually diagnosed clinically as cholecystitis, peptic ulcer or malignancy, and that therefore it should be considered in the differential diagnosis of the latter conditions. In the two cases reported by the authors improvement was apparent six and three months after operation. ROBERT ZOLLINGER, M.D.

Haberer H. von: Diverticulitis (Divertikulitis). *Zentralbl f Chir* 1934, p 805.

The differentiation of diverticulitis from carcinoma of the colon is frequently difficult. The author reports three cases of diverticulitis in detail. The first was that of a woman who was subjected to operation after an erroneous diagnosis of carcinoma and even on the basis of the operative findings was believed to have a carcinoma of the sigmoid. Following the formation of a lateral artificial anus in the cæcum the fever and cachexia disappeared and the bowels moved naturally. Therefore the lesion could not have been a carcinoma and must have been an inflammatory mass. On the basis of other observations the author concludes that the condition was probably diverticulitis.

In the second case reported the correct diagnosis was made before operation. Perforation of the bladder had occurred with grave sequelæ but cancer cachexia was absent and roentgen examination showed a pronounced diverticulum formation in the region of the stenosis. The assumption that because of the extensive adhesions caused by diverticulitis practically no other treatment than colostomy is possible has been proved incorrect by the success of resection done in two stages. An anastomosis to pass around the obstruction is usually impossible or too dangerous because of the extensive adhesions of the inflammatory tumor and the pathological changes in the walls of the intestine above and below the mass. On the other hand, the inflammatory tumor may be removed from above despite the adhesions in fact such removal may be necessary as, for example in cases in which there is perforation of the bladder with resulting cystitis and danger of ascending infection. In such cases the only procedure possible is separation of the inflamed intestinal mass from the

bladder followed by suture of the bladder. A threatening infection of the peritoneum is best prevented by extra abdominal delivery and fixation or removal of the involved portion of intestine. The author obtained good results from removal. He concludes that the lateral artificial anus should not be closed within less than a year because in the second case he reports the pouch of Douglas drained pus for a very long time and subsequent roentgen examination with the use of a contrast medium disclosed the presence of other diverticula in the lower part of the colon.

The inflammatory tumor of the colon invaded the posterior wall of the bladder also in the third case reported by von Haberer, but in this instance the mucosa was not perforated and at operation could be preserved intact. As the patient was corpulent and the mesentery markedly shrunken, exteriorization of the diseased portion of intestine could not be considered. Resection with end-to-end anastomosis of the intestine was technically possible but was believed to be contra indicated because of the presence of inflammatory changes throughout the entire descending colon. Therefore only the mass adherent to the bladder was removed and an artificial anus was established. The patient made a remarkable recovery. Later restoration of normal conditions may be possible.

In the two last cases the author will delay closure of the artificial anus for a long time and will close it ultimately only at the insistence of the patient as there are reports of cases in which closure of the artificial anus was followed by recurrence of the attacks of colic due to the presence of other diverticula. Without doubt there is, in many cases, in addition to the diverticulitis a more or less extensive diverticulosis which is capable of causing recurrence of the trouble. Moreover in the author's patients the colon as a whole was so changed by inflammation that a one-stage resection was considered too dangerous although today von Haberer performs a one stage resection more and more frequently in other diseases of the colon, including carcinoma.

An insurance company with which one of von Haberer's patients was insured against sickness refused to meet the cost of the treatment, contending that the condition was congenital. This assumption is incorrect for the following reasons:

- 1 Only certain diverticula are congenital the others, perhaps the majority are acquired.
- 2 Diverticulosis and diverticulitis are different conditions. Diverticulosis which is often symptomless, is not to be regarded as a disease. Disease is not present until diverticulitis develops. Diverticulitis is always acquired, never congenital.

ERICH HEMPEL (Z)

Ikeda, K.: Roentgenological Observations of the Colon in Amoebic Dysentery with a Report of Seven Cases Originating in Chicago. *Radiology* 1934, xiii, 610.

Ikeda was afforded the opportunity to observe the colon roentgenologically in the cases of seven persons

who contracted amoebic dysentery while visiting in Chicago during the summer of 1933. In all of the cases fairly accurate epidemiological data were obtained and the condition probably represented the uncomplicated stages of the disease with a lesion more or less localized and of short duration. In all but one case a ray examination of the colon was made both before and after the institution of emetin treatment.

It has been shown that the cysts of *endamoeba histolytica* are carried down into the cecum before they become activated into the protozoan form. The normal alkaline reaction of the flora of the colon and the natural reservoir like character of the cecum appear to favor multiplication of the liberated amoebae and the development of the first lesions in the cecal portion of the colon. It seems likely to the author that in the majority of the cases which are diagnosed and treated early involvement of the colon beyond the cecum and the proximal portion of the ascending colon may be prevented. The rectum another dilated reservoir is the second most common site of involvement, and the sigmoid the third.

The early lesions are essentially microscopic and quite superficial. The amoebae penetrate the mucosa along the glandular slits and invade the submucosa deeply where they multiply and by cytolytic action cause a rapid liquefaction necrosis of the involved area. This is soon transformed into a cyst like formation which becomes filled with glairy mucus and bulges out over the mucosal surface. At the point of primary invasion a small superficial ulcer with a necrotic center develops. A well-developed lesion is characterized by a deep irregular ulcer involving the submucosa, often penetrating into the circular muscle bundles of the intestinal wall, and presenting an overhanging and undermining mucosa edge and a necrotic base. The surrounding tissues are edematous and indurated. Two or more ulcers may coalesce. The usual inflammatory reactions involve the tissues about the ulcerations. Areas of repair and cicatrization and of fresh involvement are constantly added to the general pathological picture. These processes cause irregular induration and thickening of the bowel walls with consequent deformity and narrowing of the bowel lumen. Amoebic lesions of long standing may develop into a granulomatous growth involving a large or small segment of the bowel. Such a mass may cause symptoms and is easily mistaken for a cancerous growth. The terminal ileum may become involved early in the disease.

The author divides his cases into the acute, subacute or recurrent acute, and early chronic, according to the duration of the illness. All of the patients were suffering from active dysentery and abdominal discomfort of varying intensity at the time of their admission to the hospital. The diagnosis of amoebic dysentery was readily established by the finding of *endamoeba histolytica* in the stools.

The roentgen appearance of the colon varies considerably depending upon the stage of the infection.

In the earliest stages no appreciable changes are noted. Later fine saw tooth projections which probably represent small superficial ulcerations may develop along the walls. Fine feathery or thorny filling defects on the indurated walls signify a later stage of the lesion in which the submucosa and muscularis are involved in an extensive inflammatory process. During the subacute or early chronic stage roentgen examination reveals a somewhat characteristic deformity of the cecum and ascending colon with an apparent shortening or contraction of the bowel wall and induration and filling defects of varying degree. On the institution of emetin treatment these changes rapidly disappear. When the lesion is sharply localized and leads to obstruction it may be confused with cancer of the bowel, but such confusion is not likely in cases of advanced lesions which are diffuse and extensive.

A ray examination of the colon in amoebic dysentery is of value more as a guide to treatment than a means of positive diagnosis. It constitutes a positive means of determining the location, extent, and degree of the involvement. JOHN W. NURSE, M.D.

Scholz, T.: The Solution of the Roentgen Diagnostic Problem in Chronic Appendicitis. *Am J Roentgenol* 1934, xvii, 79.

The author is of the opinion that of all the signs of chronic appendicitis, tenderness over the appendix region visualized in the roentgenogram is the only sign of value. He states that when reliance is placed on this sign a definitely proved diagnosis can be made in approximately 90 per cent of the cases. While absence of the sign does not exclude the presence of an appendix lesion, it indicates that no inflammatory lesion is present at the time of the examination. Examination at the time of a recurrent attack may reveal tenderness over the area. A roentgenogram of the appendix is of aid to the surgeon in the planning of the surgical procedure.

Roentgen examination of the appendix is of value chiefly in differential diagnosis. It should always include the entire gastro-intestinal tract and often the chest, urinary tract, and lower spine.

Gross anatomical changes in the appendix often do not manifest themselves in a characteristic manner. Sections will show chronic gross anatomical changes in many clinically normal appendices. Hence the presence of anatomical changes cannot be regarded as reliable proof of the correctness of a diagnosis of chronic appendicitis. A much better criterion is the therapeutic result.

E. C. BARTH, M.D.

Koster H., and Kasman, L. P.: Tuberculous of the Appendix. *Arch Surg* 1934, xlviii, 1149.

In 1917 Scott collected 83 cases of proved tuberculous appendicitis from the literature up to that time and added a case of his own. The authors abstract the reports of 34 cases appearing in the literature since 1917 and report in detail 4 cases of their own bringing the total number on record up to

127 Cases of miliary tuberculosis with generalized involvement of all organs including the appendix are not included

Muller stated that the disease occurs more frequently in males than in females, the ratio being 3 : 2. In most of the cases in the literature the patient was a young adult. Of the authors' cases, 2 were those of males and 1 those of females. These 4 cases were encountered in a series of 3,271 consecutive appendectomies. In 3 of them the condition was apparently primary in the appendix. In 1, it was associated with pulmonary tuberculosis.

A review of the literature reveals that tuberculosis of the appendix may be either primary or secondary. The primary type is exceedingly rare there being only 1 case on record in which autopsy following appendectomy for tuberculous appendicitis was negative for lesions elsewhere with the exception of involvement of the regional ileocolic lymph glands. Even in the latter case an old healed focus or a small lesion in a distant lymph gland may have escaped detection.

In the great majority of cases the appendiceal condition is secondary to or associated with tuberculous lesions elsewhere. The most common associated lesion is tuberculosis of the intestines, especially of the caecum. The swallowing of infected sputum in cases of pulmonary tuberculosis and the ingestion of infected food (milk or butter) are probably the most common causes of tuberculosis of the appendix and intestine and constitute the most likely explanation for the possible occurrence of primary appendiceal tuberculosis. With regard to the occurrence of infection of the appendix by way of the blood stream, lymph stream or peritoneum little can be said.

Clinically the disease may manifest itself in an acute, a chronic, or a latent form. In the acute form which is rare, its differentiation from acute appendicitis is almost impossible. However it may be suspected in a patient with well-developed tuberculous lesions elsewhere who develops symptoms of acute appendicitis. In the absence of a history of tuberculous lesions elsewhere, there are no signs by means of which acute tuberculous appendicitis can be differentiated from acute appendicitis of the usual type.

In the chronic form of tuberculosis of the appendix which is the most frequent form the tuberculous nature of the lesion may be indicated by a history of tuberculosis elsewhere, recurrent attacks of diarrhoea, and the presence of a mass without the symptoms of an abscess in the region of the appendix. The general signs include a characteristic afternoon rise in the temperature, slight acceleration of the pulse rate, a slight loss of weight, and in some instances, night sweats. Acute exacerbation may occur as in the usual variety of chronic appendicitis.

The latent form of tuberculosis of the appendix is of course, symptomless. The diagnosis is made only by microscopic examination in cases in which incidental appendectomy is performed in the course of some other intra abdominal operation.

Pathologically the appendiceal lesions are of 2 types, the ulcerative and the hyperplastic. The ulcerative lesions are by far the more common. The gross appearance of the appendix may vary from that of slight congestion to that of active acute inflammation. Ulceration begins in the mucosa and may involve the entire wall of the organ. The base of the ulcer may present a picture of caseation or minute tubercles. In the early stages, ulceration is most common at the tip and the base. Advanced ulceration may result in perforation with the onset of the usual clinical picture of localized or diffuse peritoneal infection.

The hyperplastic type of tuberculous appendicitis is rare. In this condition the appendix increases in size because of thickening of its wall. Its lumen often becomes obliterated. Occasionally it may be palpated through the abdominal wall. On microscopic examination the mucosa is usually found to be intact, while the muscularis is markedly thickened as the result of the growth of connective tissue and lymphoid infiltration. For the most part, ulceration and caseation are absent.

If the disease is primary in the appendix appendectomy should offer hope of cure if it is performed before regional and distant involvement occur. Secondary tuberculosis of the appendix has a less favorable prognosis, especially when a coincidental active tuberculous lesion is present elsewhere. In acute cases, immediate appendectomy must be performed regardless of the presence of tuberculous lesions elsewhere. In chronic cases the condition of the lungs should determine the advisability of surgical intervention.

The article has an extensive bibliography.

ARTHUR S. W. TUCKER, M.D.

Kirschner M.: The Synchronous Procedure of Abdominosacral Radical Operation for Cancer of the Rectum (Das synchrone Verfahren der abdominosakralen Radikaloperation des Mastdarmkrebses). *Chirurg* 1934, VI 233.

The one stage abdominosacral procedure permits a radicality which is impossible by any other procedure. However the extent and long duration of the operation increase the operative mortality.

In fifty four radical sacral operations performed by the author since 1927 the operative mortality was 18.5 per cent and in fifty five radical abdominosacral operations it was 35.4 per cent. When the combined operation is performed in one stage the changing of the patient's position presents difficulties and causes a loss of valuable time. To gain time Kirschner has recently carried out the operative procedures from above and from below not in succession, but simultaneously. Two groups of surgeons are active at the same time. The patient is placed in a position with the pelvis sharply elevated and the legs raised obliquely toward the ceiling by means of slings, the hip joints slightly flexed and sacrum projecting half over the lower edge of the table. The operative procedures are then carried out simultaneously from the

anterior and posterior sides, the two groups of surgeons cooperating. The operative field is excellently exposed and the anatomical procedures are rendered very easy so that, in addition to saving time, this procedure considerably simplifies the operative technique.

The chief surgeon begins with a midline incision from the umbilicus and at the same time the assistant surgeon injects under high pressure a local anesthetic into the sacral region to produce anesthesia of the operative field. As soon as the chief surgeon has concluded the abdominal examination and has decided in favor of radical operation the assistant surgeon circumcises the anus, closes it with a suture, and then chisels through the lowermost sacral vertebra. He then proceeds along the anterior surface of the sacrum behind the rectal fascia up to the vicinity of the promontory. Finally the lower end of the rectum with the sphincter muscle is separated laterally and anteriorly in the usual manner. The abdominal cavity is not opened from below. During the same period of time the chief surgeon has mobilized the sigmoid and divided it at a suitable site. Both stumps are invaginated and sutured. The operation is then continued in the usual way and the main stem of the superior and middle sacral arteries is divided. Finally the pelvic colon and rectum are separated from the stump of the sacrum and the connection is made with the tunnel pushed up from below. By the introduction of a powerful ray of light from the posterior aspect of the pelvis the further separation is rendered exceedingly easy. A tube is introduced into the protruding upper end of the sigmoid and fastened by a ring-shaped constriction of the gut for passage of the feces. In this way the wound is protected against feces for a number of days and the gases are permitted to escape from the very first moment.

The average length of time required for the performance of this new operation is about an hour.

A. W. FISCHER (Z)

Hankins, F. D. and Harding, W. G. M.: Acanthoma of the Anus. A Report of Three Cases. *Arch Surg* 934, LXIV, 77.

The authors review 40 cases of acanthoma of the anus which have been reported in the literature of the past two decades and report in detail the clinical course and autopsy findings in 3 cases which they found in the study of 1,007 malignant tumors discovered in 9,000 consecutive autopsies performed at the Los Angeles County General Hospital.

Acanthoma of the anus is a sharply demarcated lesion usually arising at the mucocutaneous junction and ulcerating late in its course. It may be of the erythrotytic or the endophytic type. In cases of tumor of the erythrotytic type the growth is exuberant and protrudes as a viable tumor. In those of tumor of the endophytic type the anal canal is obstructed, but no neoplasm is seen. From the point of view of pathology anal acanthomata are of a comparatively low degree of malignancy. The 3 tumors

studied by the authors were classified as of Grade 1 (Broders).
EARL GARNETT, M.D.

LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Mastrosimone, C.: The Mechanism of Torsion of the Gall Bladder (*Sul meccanismo della torsione della cistifellea*). *Ann Med e Chir* 1934, LVII, 385.

In experiments carried out on eleven dogs to determine the mechanism of torsion of the gall bladder the gall bladder was dissected free from the lower surface of the liver so that it hung down free in the abdomen, the neck of the cystic duct was cauterized with a silver nitrate pencil so that it was partially constricted but not entirely occluded, and from 120 to 200 c.c. of physiological salt solution were injected into the gall bladder. When the animals were killed after one or two weeks, torsion of the gall bladder varying from about 90 degrees to two complete turns was found in seven. The torsion was greater the fuller the gall bladder. The author believes it was due to unequal weakening of the muscle fibers of the wall, the fibers that were less injured initiating the torsion by contracting more strongly than those that were more injured.

The clinical conditions producing such torsion are (1) chronic distention of the gall bladder which elongates and relaxes its mesentery so that in time it acquires abnormal mobility (2) traction on the organ by adhesions to the stomach and colon and (3) the presence of many stones causing weakening and elongation of the organ.

AUDREY GORE MORGAN, M.D.

Castro de Anciles, J. H.: The Pathogenesis of Gall Stones and the Functions of the Gall Bladder (*Contribuição para o estudo da patogenia de litase biliar e das funções vesiculares*). *Arq de pediat* 934, VI.

The first part of this article deals with the physiology normal anatomy and pathological anatomy of the biliary tract.

In the second part the author reports the findings of his experimental investigations regarding the pathogenesis of gall stones and the functions of the gall bladder. In experiments on sixty-seven dogs he followed up the formation of precipitates and concretions in the gall bladder from the first traces of precipitation to the definite formation of stones. In other experiments he studied the function of the gall-bladder mucous membrane especially its concentrating capacity and secretory function. When the cystic duct was ligated an amorphous bilirubin precipitate was formed in forty five minutes. Later the precipitates and concretions disappeared as the result of transformation of the bilirubin into biliverdin brought about by the mucus and oxydases of the gall bladder.

When inflammation of the gall-bladder mucous membrane was produced by mechanical irritation and infection, the inflammation caused cholesterol

precipitates that were not seen in simple stagnation. On faradic stimulation of the vagus with ligation of the cystic duct, macroscopic concretions were formed in two hours. Stimulation of the vagus also caused the precipitation of cholesterol and lipid infiltration of the mucous membrane.

In another series of experiments the author studied variations in the concentration of bilirubin and cholesterol following variations in the size of the gall bladder caused by stimulation of the vagus. He found that the increase in concentration exceeded the reduction in the size of the gall bladder. From this he concluded that bilirubin and cholesterol are produced by the gall bladder wall, either by excretion or by a re-excretion similar to that which takes place in the intestine. He found also that the gall-bladder epithelium excreted dyes and iodine given parenterally, an observation which supported his theory that the epithelium has excretory functions.

From the embryological development of the gall bladder he concluded that the gall bladder mucous membrane secretes ferments. After ligation of the cystic duct in experiments carried out to prove this theory he found protease, amylase, and lipase and noted that the amount of lipase increased under the stimulating action of pilocarpin and histamin while the amylolytic and proteolytic ferments showed no appreciable change. He believes that the gall bladder lipase is secreted by the glands of the gall bladder in a manner similar to that in which intestinal lipase is secreted, and that its function is to split cholesterol before it is absorbed by the mucous membrane. He found that histamin caused pancreatic hypersecretion independently of gastric hypersecretion. In a study of the diffusion of bile in dialysis tubes he found that the pigments acted like diffusible salts. He thinks that when the mucous membrane is inflamed it acts as a dialysis membrane, preventing the absorption of cholesterol and permitting dialysis of pigments, thus producing the white bile of gall bladder hydrops and pure cholesterol stones.

The article has a large number of illustrations and an extensive bibliography.

AUDREY GOSS MORGAN, M.D.

Thorek, M. Electrosurgical Obliteration of the Gall Bladder. *J. Am. M. Ass.*, 1934, CIII, 169.

The procedure described is carried out under general or spinal anesthesia. Following ample exposure with mobilization of the falciform ligament the gall-bladder contents are aspirated and the biliary passages explored. Double ligation and division of the cystic duct and artery are then done and the redundant part of the gall bladder wall is removed by means of a special diathermy scissors with simultaneous coagulation of the branches of the cystic artery coursing in the gall bladder wall. Only the portion of the gall bladder wall which is attached to the gall-bladder bed is permitted to remain. This is slowly coagulated to the desired depth. The edges of the coagulated segment of

gall bladder are then approximated with catgut sutures and the falciform ligament is attached to the coagulated area by sutures previously left long. No drains are used.

This method was used in a series of seventy five consecutive unselected cases without a fatality. Its value lies in (1) the possibility of obliterating and covering the gall bladder bed which contains capillaries and often larger bile ducts that, if not obliterated, often cause bile leakage, and (2) the omission of drainage which favors bile seepage.

ELIZABETH M. CRANFON

Trinchera, C.: The Pathological Anatomy and Physio-pathology of the Pancreas in Intestinal Occlusion (*Anatomia patologica e fisiopatologia del pancreas nelle occlusioni intestinali*). *Policlin.*, Rome, 1934, xli sez. chir. 319.

The author reports experiments on dogs in which Pawlow's pancreatic fistulae were established and the function of the pancreas was studied after high and low occlusion of the small intestine. He found that high occlusion of the intestine does not greatly affect either the internal or the external secretion of the pancreas. The pancreas was examined both macroscopically and microscopically. There were no marked changes in the organs, either necrotic or degenerative. During life, the concentration of the ferments in the pancreatic juice was normal and there was no marked change in the diastase content of the urine or blood serum. Neither was there any marked change in the blood sugar or more important, in the curve of glucose concentration in the blood tested by a provoked fasting glycemia.

Mention is made of the report by Johnstone, Clasen, and Orr in the October 1933 issue of *SURGERY GYNECOLOGY AND OBSTETRICS* of experiments on animals in which the pancreatic duct was transplanted into the jejunum and the intestine occluded above this point so that the external secretion of the pancreas was preserved to the rest of the intestine. These animals survived much longer than animals in which the pancreatic secretion was cut off. The author says that this observation confirms his findings as it shows that the external secretion of the pancreas is necessary to life and in high intestinal occlusion is preserved sufficiently.

AUDREY GOSS MORGAN, M.D.

Rienhoff W. F., Jr. and Lewis D.: Surgical Affections of the Pancreas Met With in the Johns Hopkins Hospital from 1889 to 1932 Including a Report of a Case of an Adenoma of the Islands of Langerhans and a Case of Pancreatolithiasis. *Bull. Johns Hopkins Hosp. Balt.*, 1934, LV, 386.

The authors have reviewed the cases of pancreatic disease seen on the surgical service of the Johns Hopkins Hospital from its opening in 1889 to the year 1932. During these forty three years there were admitted to the medical and surgical services 167 cases of pancreatic disturbances not including cases of diabetes mellitus. Exclusive of 9 cases

which were classified on the medical service as cases of pancreatic insufficiency there were 158 cases of disease of the pancreas among 78,000 cases treated on the surgical service during the period covered by the investigation.

Of these 158 cases, 109 (68.99 per cent) were cases of carcinoma of the pancreas, 20 (12.66 per cent) cases of chronic pancreatitis, 18 (11.39 per cent) cases of acute pancreatitis, 2 (1.27 per cent) cases of pancreatic abscess, and 7 (4.43 per cent) cases of pancreatic cyst. In 1 case, so-called pancreatic apoplexy was present and in 1 case a benign tumor was found.

The authors discuss each type of lesion separately. They state that acute pancreatitis has very characteristic signs and symptoms, but is frequently not recognized because the surgeon fails to consider the possibility of its presence. The indescribable pain, very sudden in onset, the extreme agony accompanied by which is more severe than that associated with perforated gastric or duodenal ulcer comes on often after a good meal. The patient lying perfectly quiet and flat on his back presents a marked contrast to the patient suffering from hepatic or renal colic who tosses and turns constantly. The painful drawn faces, the history of severe epigastric pain, the general condition of shock with a thread and barely perceptible pulse, and the cold, clammy, and often cyanotic extremities make up a disease picture that can hardly be mistaken. The pain, which usually comes on at night, after a full meal and is of a stabbing type, is commonly located in the pit of the stomach, but may be felt also in the back and flanks. A peculiar cyanosis of the face and neck associated with slate blue patches in the skin of the extremities occurs practically only in acute pancreatitis. In the cases reviewed by the authors there was uniformly a leucocytosis varying from 9,000 to 33,000 and in the great majority the white cell count ranged from 15,000 to 33,000. Most of the patients were between twenty-five and fifty years of age.

All cases of acute pancreatitis were treated surgically. The most important surgical procedure in this condition is free exposure of the pancreas with incision through the posterior peritoneum and the capsule of the gland followed by the establishment of drainage down to, and into the pancreas. If the patient's condition permits, it is well to establish drainage of the gall bladder and common duct and, if possible, to make certain that the common duct is

patent. Of the patients treated in this manner 55.56 per cent were cured, 5.56 per cent were benefited, and 38.89 per cent died.

In the 2 cases of pancreatic abscess the mass pointed in the region between the spleen and the left lobe of the liver. As a rule the mass can be palpated in the left upper quadrant and the tenderness is referred to this region. In both of the reviewed cases anterior drainage was accomplished with very good results.

In the case of pancreatic apoplexy death resulted from erosion of the superior pancreaticoduodenal artery. The authors call attention to the fact that the rapid clinical course and the complete necrosis of the pancreas terminating in death were suggestive of a devastating chemical reaction rather than an inflammatory process.

One of the most characteristic symptoms of chronic pancreatitis, which was present in 95 per cent of the reviewed cases, is a chronic deep, dull, aching, and boring pain in the epigastrium which is very difficult to relieve. Nausea and vomiting occurred in 90 per cent of the cases.

Operation was performed in all of the cases with only 1 fatality. Procedures which do not specifically lead to drainage of the pancreas are inefficient. If the diagnosis is doubtful, the pancreas may be explored as the chronic inflammation permits repair of the surgical defect in the gland. Of the cases reviewed, drainage of the gall bladder was done in 9 with cure in 4 and improvement in 5. A cure was obtained also by cholecystectomy in 1 case, cholecystectomy with drainage of the common duct in 2 cases, cholecystogastrostomy in 1 case, drainage of a small cavity in the pancreas in 1 case, and the removal of a stone from the duct of Wirsung in 1 case.

There were 110 cases of new growths. In 1 of these the tumor was benign, an adenoma of the islands of Langerhans. The 109 other tumors were carcinomata. Of these 86.21 per cent were in the head of the pancreas, 3.45 per cent in the body, 3.15 per cent in the tail, and 6.0 per cent were diffuse. In no case was an attempt made to remove the carcinoma. In these cases cholecystogastrostomy is preferable to cholecystenterostomy. It was found the most satisfactory of all methods used for alleviation of the symptoms.

In all of the cases of pancreatic cyst transperitoneal drainage through the gastrohepatic and gastroduodenal cements was done and was followed by recovery.

EARL O. LAMER, M.D.

GYNECOLOGY

UTERUS

Ramirez, E. and De Lillo, J. A Contribution to the Study of the Physiology of the Uterus as a Muscular Organ (Contribución al estudio de fisiología del útero como órgano muscular) *Med res mexicana* 1934 xiv 207

This is a comprehensive review of experimental investigations on the physiology of the uterus as a muscular organ. With the work of others, the authors cite their own previously reported studies on the action of various vagotropic and sympathotrophic substances on the intra-uterine ganglia in the isolated non pregnant and pregnant uterus of the rabbit and guinea pig. They believe that the method of ligation for physiological isolation of the ganglionic plexuses is particularly adapted to solution of the problem of neuromuscular relationships in the uterus.

The article contains numerous kymographic records and is supplemented with a bibliography.

M E MORSE, M D

Viannay, Basset Faure, Auvray, and Others: Discussion of the Procedure To Be Followed in Case of Perforation of the Uterus During Curettage (Sur la question de la conduite à tenir en cas de perforation utérine au cours du curettage) *Bull et mémo Soc nat de chir* 1934 lx 636

VIANNAY said that the management of cases of perforation of the uterus during curettage must be adapted to the conditions in the particular case. He reported two cases and summarized his views as follows:

1. Perforation of a uterus which is clinically free from infection should be treated expectantly.
2. In cases of perforation of a uterus which is obviously infected an immediate posterior colpotomy should be done and the surgeon should be prepared to perform an immediate hysterectomy if this should become necessary.
3. Perforation resulting from curettage performed by another surgeon under unknown circumstances should be treated by immediate laparotomy or vaginal hysterectomy. The decision with regard to suture of the rent should be made by the surgeon at the time the abdomen is opened, not before.
4. Associated visceral lesions indicate immediate laparotomy.

BASSET stated that he favors exploratory laparotomy even in doubtful cases as early operation permits prompt treatment in serious cases and does no harm if repair is unnecessary. He considers vaginal hysterectomy too radical in most cases. He condemns posterior colpotomy because it does not permit verification of or easy access to the lesion. He believes that hysterectomy is indicated when the

perforation is large or multiple perforations are present when the uterus has been incompletely evacuated or is frankly infected or friable and when, because of the presence of gestational products, blood or exudate within the pelvis, it is necessary to establish vaginal drainage. He stated that if laparotomy is performed early enough mere suturing of the wound is sufficient if the indications for hysterectomy mentioned are absent.

FAURE expressed the opinion that infection rather than the perforation is the most important factor. He stated that in the absence of signs of peritoneal involvement (abdominal rigidity distention, nausea and elevation of the temperature) he advises expectant treatment but that when infection, either mild or severe, is present, a vaginal or abdominal hysterectomy is indicated. He prefers the vaginal operation as he considers it less dangerous than the abdominal operation and it can be performed more quickly. He disapproves of attempts to suture the perforation as in most instances the perforation will heal of its own accord unless it is very extensive proper suturing of the rent is usually impossible because the tissue is friable and suturing may intensify rather than arrest the bleeding.

AUVRAY also advocated conservatism. He stated that in all cases seen by him expectant treatment was given and recovery resulted. As soon as the perforation was noted by the surgeon further curettage was discontinued. Ice bags were applied to the abdomen and the patient was kept in bed under close observation for possible further symptoms. While Auvray does not deny that surgical intervention is sometimes indicated, he stated that he reserves operation for cases of grave hemorrhage or frank infection. He condemned routine exploratory laparotomy. Posterior colpotomy he regards as useless because it does not permit repair of the lesion. He believes that laparotomy is the most logical means of approach because it alone permits proper exposure of the lesion and attending complications.

BROCC confined his discussion to perforation following curettage after abortion. In general he favors exploratory laparotomy because of the fear of associated lesions which, without it, would not be recognized until too late. He believes that suture of the perforation is indicated more often than hysterectomy although he admitted that in cases treated by suture healing will usually occur without any intervention whatever. He believes that hysterectomy is indicated when the perforation is extensive and when the uterus is incompletely emptied or obviously infected.

HUET cited five cases which he had observed. He stated that he doubts the efficacy of suturing in infected and damaged tissues of doubtful vitality. His

cases show the difficulty of making an accurate diagnosis. In many cases the perforation may be overlooked, whereas in others an apparently definite perforation cannot be found. While hysterectomy is a radical method of treatment for most cases, it removes possible complications, particularly those resulting from defective healing of the uterine wound.

Morison condemned posterior colpotomy as a useless therapeutic as well as a useless diagnostic procedure. He questioned also the value of vaginal hysterectomy because it does not permit ready inspection of the pelvis for other possible accidents resulting from the perforation of the uterus. While he recognizes the possibility of spontaneous cure, he urged that cases with an unfavorable outcome be reported in order that physicians may be reminded of the dangers attending uterine perforation.

HAROLD C. MCCR, M.D.

Orosó, F. Tumor Like Glia Proliferation in the Uterus (Geschwulstartige Gliavermehrung in dem Uterus). *Ztschr f Gynäk* 61, 367, 1934, 370, 374.

In the case of a twenty nine-year-old woman with irregular menstrual periods who had borne two children eleven and nine years previous and had had seven abortions during the first three months of gestation, curettage removed a large amount of thickened cervical mucous membrane showing large and small islands of glia which were sharply circumscribed but joined together by offshoots. Within the islands of glia were small inclusions of cervical mucosa (glands) and muscle bundles. In numerous areas the surface of the mucosa was thrown into papillary elevations by the underlying glial tissue. Except for the absence of definite nerve fibers and ganglion cells, the identity of the glia was unmistakable as is evident from the photomicrographs. The staining properties also were characteristic. In the network of uniformly thick fibers without nodes there were cells of varying size which were more or less scattered or arranged in groups and showed several star like projections. Besides the larger cells rich in protoplasm there were smaller cells poor in protoplasm which were sparsely scattered through the very fibrous tissue. In some of the smaller glial islands there were larger cells, some of which showed many nuclei and long thick projections. The latter resembled ganglion cells, but lacked characteristically staining nerve fibers. These appeared to be pathologically hypertrophied glial cells.

Curettage repeated after five months yielded the same findings. Four months later the uterus was removed because of renewed bleeding. The uterus was enlarged, and a polyp from 3 to 4 cm. long hung from the cervix into the vagina. The polyp contained glia, and glia appeared to have replaced the endometrium of the fundus of the uterus. Glia was found also when the uterus was cross-sectioned in the central portion. Microscopic examination revealed a similar glial proliferation in the mucosa from the fundus to the cervix, but not in the muscu-

lature. In spite of the extensive involvement of the endometrium with glia neither degeneration nor any sort of reaction of the mucosa was visible. Only below the os of the right fallopian tube there was a small hyaline island of cartilage with calcium deposits like dust particles and a few groups of cartilage cells invaded by glia.

The author concludes that of the various theoretically possible causes of the condition—sympthoma, metaplasia, mixed tumor and implantation of parts of an embryo—the last mentioned is most probable. He suggests that implantation from the medullary canal and a "sclerotomy" of the embryo may have occurred during a curettage. However he admits the possibility that the implanted glia became changed to a benign glioma after loss of the ganglion cells. The neoplasm was not a destructive tumor of the mixed-tumor type.

R. MEYER (G).

Hufnagel, K. Ureteral Stenosis in Carcinoma of the Cervix (Ureterstenose bei Collocarcinom). *Ztschr f urol Chir* 1934, xxxix.

The author discusses stenosis of the ureter in carcinoma of the cervix on the basis of five cases observed clinically on the urological service of the St. Hedwig Hospital, Berlin. He states that if no infection is present in carcinomatous changes of the female genital organs ureteral compression is usually due only to an increase in the size of the affected organ, but if—often as the result of operation—infection involving the ureteral wall is added to the already existing compression a true ureteral stricture results. The interference with urination is then the consequence of both compression and infection.

As a rule the stenosis occurs between the bladder and the point where the uterine artery crosses the ureter. It is rare that the carcinomatous infiltration spreads in the retroperitoneal spaces along the ureters to the region of the kidney as in one of the cases reviewed. The degree of the ureteral stenosis is not always dependent upon the extent of the carcinomatous changes in the genital organs. On the other hand, the symptoms of retention in the upper urinary passages parallel the degree of the stenosis. At first there is usually only slight discomfort. This increases to severe pain only when the stenosis becomes marked, and advances to colic as the urinary retention becomes greater. With increasing failure of urinary secretion, pre-uræmic conditions develop.

In the general determination of the indications determination of the degree of the stenosis by ureteral catheterization and filling urography and of the functional capacity of the kidneys by functional tests with elimination urography is of importance. In complete stenosis and in well-developed stenosis without complete closure filling urography is impossible and the results of functional tests and of elimination urography are not dependable. In such cases determination of the residual nitrogen and of the indican in the blood is of special importance. The changes in the urinary organs often develop

very early. According to the literature, only one half of patients with carcinoma who are not operated upon or who develop a recurrence die of the basic disease or of intercurrent diseases. The other half die of uremia, pyonephrosis, or sepsis. Therefore a palliative operation should be performed as early as possible. Even when renal insufficiency has begun improvement may be expected after operation. Only in advanced parenchymatous destruction is surgery hopeless. It is preferable to implant the ureter divided above the compression area into the skin than to implant it into the intestine. In a case of severe carcinomatous and infectious involvement of the renal pelvis and kidney, nephrostomy and decapulation were done and the subsequent treatment was limited to irradiation.

VON SCARZONI (Z)

Graff E. von: Cancer of the Cervical Stump Following Subtotal Hysterectomy. *Am J Obst & Gynec.*, 1934, XLVIII, 18

In a review of the literature on cancer of the cervical stump after subtotal hysterectomy the author found that twice as many cases were reported between 1920 and July 1933 as ever before. He is of the opinion that all of the patients in whom the cancer appeared only a year after the subtotal hysterectomy (more than 50 per cent of the total number developing the condition) would have been safe for the rest of their lives if they had had a total hysterectomy. He states that the superiority of total hysterectomy over subtotal hysterectomy has never been supported by evidence so strong as the reports of 804 cases of cancer in the cervical stump over a period of twelve years and a total of 1,169 cases.

Comparison of the 0.6 per cent possibility of cancer after subtotal hysterectomy with the actual 4 per cent incidence of stump cancer indicates that the danger of cancerous degeneration present at the time of operation or developing later is more than 6½ times as great as ordinarily reckoned.

In conclusion the author states that stump cancer following subtotal hysterectomy is much more frequent than is generally believed. Lacerations of the cervix and cervicitis following childbirth are unduly emphasized as initiating factors. Jewish women are protected by racial immunity against cancer of the cervix, a fact which may somewhat explain conflicting opinions as to the danger and frequency of stump cancer following subtotal hysterectomy. As cancer of the cervix is especially frequent in fibroid uteri women with fibroids are more likely than others to develop cancer of the cervical stump.

Attempts to prevent stump cancer by destroying the cervical mucosa have failed as more than 80 per cent of stump cancers originate from the squamous-cell epithelium of the vaginal portion of the cervix. The only reliable protective measure against stump cancer is total hysterectomy.

In the discussion of this report LYNN said that he knew of no reason why removal of the cervix in an ordinary uncomplicated case such as a case of

fibroids, should have any higher mortality than the removal of a cervix which is ultimately infected.

BURIS reported 2 cases of cancer of the cervix in Jewish women.

DAVIS reported 3 cases of carcinoma of the cervical stump. He stated that he still performs more subtotal hysterectomies than total hysterectomies as many of his patients have a deep pelvis and very extensive pelvic inflammatory conditions which render total hysterectomy difficult.

VOOR said that he had performed only 37 subtotal hysterectomies. In 2 cases, a carcinoma of the cervix was recognized only after the uterus was removed. In 2 cases carcinoma developed in the cervical stump.

FALLS reported that of 128 cases in which an operation was done for fibroids, malignancy was found in 13.8 per cent. EDWARD L. CORRELL, M.D.

ADNEXAL AND PERIUTERINE CONDITIONS

Pardini I. A Myoma of the Intra Abdominal Portion of the Round Ligament (Un mioma della porzione intraddominale del ligamento rotondo). *Chir. ital.* 1934, XXXI, 355

The case reported was that of a woman forty years of age. The tumor was complicated by a hypertension of 260/130. After satisfactory reduction of the blood pressure by several venesections, laparotomy and a simple myomectomy were done. The tumor was situated in the substance of the round ligament. It weighed 100 gm. Histological examination showed it to be a pure myoma.

In a review of the literature the author was able to find the records of 160 cases of myoma of the round ligament. In 120 the neoplasm was in the extra-abdominal portion and in 40 in the intra-abdominal portion of the ligament.

FERRO, C. FEROLA, M.D.

Jeanneney G.: Surgical Treatment of Ovarian Insufficiencies (Traitement chirurgical des insuffisances ovariennes). *Rev. franç. de gynéc. et d'obst.* 1934, XXXI, 590.

There are some cases of insufficiency of the ovary rather rare however that are so severe and so resistant to other forms of treatment that surgical treatment is required. The author describes the biological tests for major insufficiency of the ovary. He states that there are still too many unknown factors in the condition for the gynecologist to be able to say definitely whether a given case is surgical or medical or to promise definite results from either form of treatment. Surgery of insufficiency of the ovary is still an exceptional surgery limited in its effectiveness and therefore in its indications.

The pathogenesis of insufficiency of the ovary is infinitely complex. The ovary is not an isolated organ. It is so intimately connected with the uterus and the other endocrine glands that an insufficiency may be due, not to disease of the ovary itself but to disequilibrium of the whole chain of

endocrine glands or dysfunction of a gland other than the ovary. In some syndromes due to disease of the hypophysis, suprarenal or thyroid, aplasia of the ovary is only a secondary phenomenon and any ovarian treatment, medical or surgical will be useless until the primary lesion is treated. In some obscure cases the surgeon must determine whether the ovarian disturbance is really primary and whether the failure of medical treatment was not due to an erroneous interpretation of the pathogenesis of the condition. Therefore it is of primary importance to make a careful diagnosis of the cause before proceeding to treatment.

Surgical treatment is indicated in non-compensated major insufficiencies of the ovary in which the clinical signs (vasomotor disturbance and severe hot flashes) the therapeutic signs (ineffectiveness of medical treatment) and the biological signs (the findings of interferometry and the follicularinemia curve) show a severe or intractable condition. These cases are exceptional.

In some cases of congenital insufficiency of the ovaries the condition is due to ventral aplasia of the genital tract and exploratory laparotomy may show the cause and indicate that plastic treatment may be effective. In pure genital infantilism operation on the sympathetic and the ovary generally gives mediocre results, but as occasionally it has yielded excellent results an attempt at surgical intervention is justifiable. In genital aplasia secondary to lesions of the hypophysis, suprarenals, and thyroid the treatment should be directed at the primary disease and if necessary polyvalent grafts should be used. The insufficiencies of puberty often result from genital hypoplasia which can be improved by grafts or sympathectomy. As they are often due also to latent inflammatory lesions, particularly tuberculosis of the adnexa, surgical exploration is justifiable.

Of the many forms of insufficiency occurring in the course of active sexual life the majority are due to congenital disability aggravated by some other factor. In some cases infection brings about castration, while in others cysts of the ovary or of the corpus luteum produce inhibiting reflexes. In both these groups surgery is useful. In the former the use of autogenous grafts, operation on the pelvic sympathetic hypogastric sympathectomy or resection of the preauricular nerve is indicated. In the latter the diseased ovary should be removed. In these cases the surgeon is often surprised to find an ovarian insufficiency cured by an ordinary abdominal operation such as appendectomy or cholecystectomy. Theoretically, these cases show that there are inhibiting reflexes between the various viscera, and practically they show that the cause of ovarian insufficiency may lie outside the genital tract.

In the premature menopause surgery gives only mediocre results. Grafts and operations on the pelvic sympathetic do not succeed unless the insufficiency is comparatively recent and the patient is not too old actually and physiologically.

Some cases of dysfunction and hypofunction of the ovary such as those of dysmenorrhea and sterility are amenable to surgical treatment.

The most important indications for surgery are found in cases of surgical castration. In these the difficult problem is to remove only just as much as is necessary and not enough to cause a severe premature menopause. When economical surgery is impossible and all the ovarian tissue must be removed, autografts should be used to prevent severe signs of the menopause. Heterologous grafts practically always fail. Even homologous grafts from individuals of the same group and of the same age which are implanted with the greatest care generally undergo sclerosis after a varying length of time. The graft is only a reservoir of hormones for a certain time rather than an active gland. However it often serves to tide the patient over to a normal menopause.

In hypofunction of the ovary from infantilism the results of grafting are very mediocre. Nevertheless, successful results from time to time show that grafting is worth while trying in order to determine the rules which govern the effects. The technique which is generally used and is recommended by the author is that of Douay. In which the ovarian tissue is grafted into the labium majus. In this site the graft can be kept under observation and if necessary can be re-activated from time to time by injections of folliculin or extract of the anterior lobe of the hypophysis.

As the ovarian insufficiency of the menopause is normal any attempt to combat it seems to be a biological error. However when anomalies or diseases are associated with the menopause an effort to correct them is entirely justifiable. Grafts may be tried in these cases, but as the organism is not receptive they are generally absorbed in a short time and their effects are not very marked.

With the exception of grafting, surgical methods, direct and indirect, have given only uncertain results. Surgery in this field has gone in advance of physiological knowledge, which generally serves as its guide. However this empiricism is not to be condemned. Its chance victories have opened up new fields for investigation, and the accumulation of positive and negative results forms a basis for scientific data of great value.

UMARY GOSS MORGAN, M.D.

Pratt, J. P.: Mild Symptoms from Rupture of a Follicle Cyst or Corpus Luteum. *Am J Obst. & Gynec.* 1934, **xxvii** 816.

The author reports ten cases of exaggerated physiological function or pathological function of the ovaries giving rise to symptoms. The symptoms of this condition must be differentiated from those of ectopic pregnancy, endometriosis, twisted ovarian pedicle, and gastro-intestinal disturbances, especially appendicitis.

The differentiation of the symptoms produced by irritating fluid from the follicular apparatus from

the symptoms of appendicitis of the obstructive type is most urgent. Suddenness of onset is characteristic of both the pelvic condition and obstruction of the appendix, but in the latter the vomiting is usually much more pronounced, the pain more intense, the temperature higher and the leucocyte count greater. Observation for one or two hours will usually be sufficient to establish or disprove the presence of obstructive appendicitis.

The inflammatory type of appendicitis cannot be differentiated so quickly as its onset is insidious and its progress slower. However because of its slow progress, the period of observation may be longer.

The localization of the tenderness is important in either type of appendicitis. In disturbance of the follicular apparatus the maximum tenderness is usually below McBurney's point while in appendicitis it is at McBurney's point. Repeated attempts by the patient and the examiner will help to establish the localization satisfactorily. Confirmation may be obtained by bimanual palpation and manipulation of the ovary.

In the case of a woman in the reproductive age who complains of pain in the lower abdomen during the middle or latter half of the intermenstrual period which is accompanied by tenderness of the ovary a slight elevation of the temperature and a mild leucocytosis, the possibility of irritation from fluid from the follicle or corpus luteum should be considered even when there is a history of anorexia, nausea and occasional vomiting.

EDWARD L. CORNELL, M D

Crossen R. J., and Soule S. D.: Successful Removal of a 78-Lb Ovarian Cyst. *Am J Obst & Gynec* 1934 xxviii, 137

A woman sixty-one years of age complained of progressive enlargement of the abdomen over a period of twenty three years, a gain of 180 lbs. in weight during the last five years, edema of the lower extremities during the last two years and more recently, dyspnea, burning on urination, nausea, and vomiting. During the last five years there had been also a marked increase in the rate of growth.

The abdomen was found filled with fluid and enlarged to a huge size. When the patient assumed an erect posture the mass hung down to the knees. When she lay flat on her back, the circumference of the abdomen at the level of the iliac crests was 71 in.

Under morphine-hyocine semi narcosis supplemented by local anesthesia induced with 1 per cent nupercaine, an incision extending upward for a distance of 10 in. was made to the right of the umbilicus. The abdominal wall was about 2 in. thick and contained practically no muscle in the midline. When the fascia was opened the peritoneum was found attached to it. The cyst wall presented and was caught with two forceps. On the introduction of a trocar 28 000 ccm. of fluid were removed during a period of thirty minutes. The cyst wall was then worked up gradually through the incision. There were no adhesions. The pedicle was ligated. On the

right side there was an intraligamentary cyst filling the entire pelvis and raising the posterior peritoneum almost to the reflection of the diaphragm. No attempt was made to remove this cyst. Two assistants on each side maintained pressure as the fluid was withdrawn. The patient withstood the operation well.

There was a weight loss of 75½ lbs. The post operative course was surprisingly smooth. The patient was discharged from the hospital on the seventeenth postoperative day. The laboratory diagnosis was pseudomucinous cystadenoma of the ovary. Since the operation there has been no evidence of enlargement of the abdomen and no further operative treatment has been advised.

EDWARD L. CORNELL, M D

Baccarini L.: A Contribution to the Study of Ovarian Teratomata in Childhood (Contributo allo studio dei teratomi ovarici nell'infanzia). *Arch ital di chir* 1934 xxxvi, 161

The genesis of ovarian teratomata is still obscure. Numerous theories have been advanced regarding it but none has proved entirely satisfactory. At the present time the parthenogenetic and the blastomeric theories are most widely accepted.

Baccarini reports an ovarian teratoma occurring in a child eight years of age which was removed successfully by abdominal section. The clinical history and histological findings are reported in detail. Several photomicrographs are included in the article.

GEORGE C. FINOLA, M D

EXTERNAL GENITALIA

Taddai A.: Adenoma of the Sweat Glands in the External Genitalia of the Female (Adenoma delle ghiandole sudonarie dei genitali esterni femminili). *Chir ital* 1934, xxxvi, 220

Histological study of a tumor mass removed under local anesthesia from the posterior one-third of the right labium majus of a woman forty four years old revealed an encapsulated adenoma of a sweat gland. From a review of the literature Taddai draws the following conclusions:

1 The condition is very rare only thirty two cases having been reported previously.

2 The incidence of malignant transformation with metastasis is relatively high.

3 The etiology has not been definitely established, numerous and diverse theories having been advanced.

4 As the diagnosis is impossible without histological examination all nodules in and about the vulva should be removed even when their appearance is benign.

GEORGE C. FINOLA, M D

Black W. T.: Posterior Vaginal Hernia. *Am J Obst & Gynec* 1934 xxviii, 837

Posterior vaginal hernia is rare. In a review of the literature records of only sixty-one cases were found. The author reports a case of such a hernia in

a woman sixty five years of age. Seven weeks before the patient consulted Black she had had a fall which resulted in severe pain in the rectovaginal region. After the injury she was unable to work until she received surgical relief. Pelvic examination revealed a second-degree laceration of the perineum and a large mass bulging through the posterior vaginal canal and vulvar orifice.

At operation it was found that the enterocele had descended through the mesal line of the pelvis, which is the weakest portion of the pelvic cavity. Ligation of the sac was done as in inguinal herniectomy. A suture was passed through the stump of the sac and fixed to the posterior surface of the uterus. The technique of the rest of the operation was the same as that employed for a high perineorrhaphy.

EDWARD L. CORNWELL, M.D.

MISCELLANEOUS

Siebert, F. : Experiences With, and Results of, the Hormone Treatment of Disturbances of the Female Genitalia (Erfahrungen und Ergebnisse mit der Hormonbehandlung weiblicher Genitalstörungen) *Zeitschrift für Geburtshilfe* 1933, cvh, 17.

In the period from 1929 to 1933 118 cases of disturbances of the female genitalia were treated with sex hormones (follicular hormones and gonadotropic hormones) by various methods based on various theories. In all cases of disturbances of genital function during the reproductive period of life, from 300 to 400 units of follicular hormone were given daily over a period of fourteen consecutive days during the intermenstrual interval. In cases of disturbances with evidences of functional deficiency a dosage adapted to the requirements of the particular patient was given over a longer period of time. Hormone of the anterior lobe of the hypophysis and follicular hormone were given either separately or together over a period of fourteen consecutive days. The hormone of the anterior lobe of the hypophysis was given by injection and the follicular hormone by mouth. The treatment was continued for at least six months.

In a case of primary amenorrhea in a woman with normally developed genital organs and marked adiposity 105,000 rat units of prolactin, 55,000 mouse units of follicular hormone and 30 tablets of inulin were given in a period of six months. This treatment resulted in a decrease in weight of 15 kgm. but did not re-establish menstruation. Even after further treatment with both thyroid and follicular hormones there was no change in the genital condition.

In the case of a twenty five-year-old woman with typically infantile genitalia and primary amenorrhea 9,000 rat units of prolactin were given by injection, 28,000 rat units of prolactin were given by mouth and 40,000 mouse units of follicular hormone were given by mouth over a period of four months and then, after an interval of five months, 30,000 additional rat units of prolactin were given over a period of two months. No effect was apparent.

The author states that for the evaluation of a method of treating secondary amenorrhea cases in which the amenorrhea has been present for only a few months are not suitable. Cases in which the amenorrhea has persisted for at least six months should be chosen.

Of 16 cases of secondary amenorrhea reviewed 7 were treated with ovarian hormone alone and 9 with both ovarian and gonadotropic hormone. As the dosage varied greatly it cannot be reported in detail in an abstract. In 4 cases there was clinical evidence of cure as cyclical bleeding occurred even after discontinuance of the treatment. However this result was obtained only in cases in which the amenorrhea had been present for less than a year.

The therapeutic doses in these cases ranged from 3,000 mouse units of follicular hormone alone to 30,000 mouse units of follicular hormone plus 15,000 rat units of prolactin.

Of importance for the further development of hormone therapy is the fact that, with the dosage chosen, the author was able to obtain a lasting result in 4 of 16 cases of secondary amenorrhea, but that in all of these 4 cases the functional disturbances were of short duration. Of 22 cases of oligomenorrhea and hypomenorrhea, 3 were cured. For these conditions Siebert recommends a combination of follicular and thyroid hormones.

In discussing operative castration Siebert states that for the cases of women under forty years of age he advocates re-implantation of a portion of ovary in the abdominal wall. Castration with ovarian transplantation was done by him in 19 cases. As soon as symptoms of functional deficiency developed—which in the majority of the cases was immediately after the operation in spite of the implantation—hormone treatment was begun. The results of hormone treatment after castration are much better in cases in which ovarian implantation has been done than in those without such implantation. The most satisfactory hormone treatment is the administration of follicular hormone. Siebert gave daily doses of about 300 mouse units. In severe cases these were continued up to a year. In 12 cases with castration symptoms in which ovarian implantation was not done, the symptoms were not relieved by the hormone treatment.

Of 19 women with menopausal symptoms, 10 were not relieved by the treatment. C. KAUFMAN (C)

Roca, M. G. : Extensive Irreparable Vesical Fistulae Curative Treatment by Total Excision of the Lower Urinary Tract (Les grandes fistules vésicales irréparables. Traitement curatif par excision totale des voies urinaires inférieures) *Cy et Gynecol.* 1934, xvii, 409.

Roca reviews the various surgical procedures which have been devised to alleviate the condition of persons suffering from extensive irreparable vesical fistulae and shows that all of them have disadvantages and dangers. Prosthetic appliances are usually ineffective and cumbersome and do little

to relieve the patient's discomfort and embarrassment. The most satisfactory of the old methods is the Kuestner Wolkowitsch operation in which the uterus is detached from the vagina and pulled down to cover the fistulous opening. The Makenrodt operation, in which the fundus of the uterus is invaginated into the fistulous opening and Freund's modification of this procedure, in which the fundus of the uterus is interposed between the closed fistulous opening and the vaginal wall (as in the Watkins-Shauta interposition operation), render the patient incapable of child bearing and necessitate X-ray castration to suppress ovarian activity. Colpocleisis and hysterocleisis operations, in which, through closure of the vulva, the vagina and uterine cavities form reservoirs for the urine until its evacuation through a surgically formed rectovaginal fistula are condemned by the author as surgical monstrosities which are dangerous because of poor drainage and ascending infection. Transplantation of the ureters into the sigmoid is also dismissed as dangerous.

The technique of Roca's operation for the cure of inoperable vesical fistula—the formation of a permanent bladder extrophy—is described in detail. Roca says that this method has the advantage of a surgical technique which is constant and does not require changes to adapt it to the individual case. It is the operation of choice when necrosis involves the urethra, the vesical sphincter, and the trigone, i.e., the greater part of the anterior vaginal wall. It permits voluntary control of micturition and provides perfect urinary continence. It requires no prosthetic apparatus. The capacity of the bladder increases to 350 c.cm. Pregnancy and parturition are not contra indicated.

The operation is performed in two stages. In the first stage the urinary bladder is mobilized and separated from the genital organs, and a communication is established between the bladder opening and the suprapubic abdominal incision. In the second stage a sphincter is formed about the external bladder opening by suturing the pyramidalis muscles about the fistula. In the absence of a suitable pyramidalis muscle and in the cases of very fat patients this stage of the operation is not always possible.

It is performed under local anesthesia from fifteen to twenty days after the first stage.

The author reports two cases in which the described operation was performed with successful results. In both, there was a progressive increase in the size of the bladder cavity and good sphincteric control assuring both complete continence and voluntary micturition was obtained.

In discussing the possible complications which may result from the procedure Roca says that the skin may show a temporary intolerance to the urine resulting in a chemical dermatitis. Astringent solutions and emollients will increase the skin tolerance. Intolerance of the subcutaneous tissues, particularly in fat persons, may be prevented by performing a wedge-shaped excision of the fat about the fistula to form, as it were, a new umbilicus. Acute or chronic retention of urine is possible. Acute retention occurs during the immediate postoperative period. Chronic retention occurs late as the result of incomplete evacuation of the bladder with the accumulation of residual urine. The retention may be relieved by catheterization at regular intervals. Cystitis is a frequent complication before and a possible complication after the operation. Ordinary medical methods of treatment are sufficient to cure it. Hydronephrosis due to obstruction of the ureters at the trigone, displacement of the bladder or the reflux of urine in chronic distention of the bladder is a serious complication. Chronic distention of the bladder, the most frequent cause, can usually be overcome by keeping the bladder empty by means of a retention catheter. The other causes are the most serious. Impairment of the trigone should be ruled out by cystoscopy before the operation is undertaken. If only one ureteral opening is occluded by scar formation, nephrectomy on that side is indicated. Ureteral obstruction caused by tension of the displaced bladder is prevented by properly freeing the bladder from its vaginal and uterine attachments before extroverting it. Vesical calculi may result from bladder infection or urinary retention. The treatment for their prevention is the administration of urinary antiseptics and frequent bladder irrigations.

HAROLD C. MACK, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Montgomery T. L. Premature Separation of the Placenta, with Special Reference to the Etiology of Placental Lesions. *Am J Obst & G* 10:34, 1911, 33.

In the less severe cases of premature separation of the placenta the condition is not infrequently confused with lateral placenta previa. Premature separation of the normally implanted placenta appears to be a less frequent complication of pregnancy than placenta previa. At the Jefferson Medical College, Philadelphia, it occurred only once in 265 labors. The maternal mortality was 0.6 per cent and the fetal mortality 81 per cent. Twelve of the 16 fetuses were premature.

External violence is an uncommon cause of placental separation. Various degrees of separation of the placenta occur not infrequently during the course of labor. They are produced by intrapartum attempts at delivery or a sudden decrease in the volume of the uterine contents. The most common cause of premature separation of the placenta is toxemia of pregnancy. The characteristic sign in the placenta is hemorrhage.

Interruption of pregnancy often follows, although the presence of old hematoma on the surface and in the substance of the placenta in cases of nephritic toxemia indicates that small hemorrhages frequently occur without terminating pregnancy. The hemorrhagic lesions of premature separation are quite different in structure and etiology from necrosis (infarction) of the placenta. Necrosis is found frequently in the placenta of both normal and toxic patients; it appears to play no part in placental separation or pregnancy toxemia.

The type of treatment and the method of delivery in premature separation of the placenta must be adapted to the requirements of the individual case. Cesarean section should be reserved for cases in which the cervix is closed, the contraction of the uterus is unable to produce dilatation, and longer waiting means more bleeding.

In the discussion of this report ALBURY stated that partial premature separation of the placenta is often unrecognized as the hemorrhage is not great and the classical signs are absent.

COGILL reported the case of a young primipara who developed a rapid toxemia.

EDWARD L. CORWELL, M.D.

Fätyöl C.: Acute Appendicitis During the Course of Pregnancy (*Warte Wärmfortschrünge in der Lauf der Schwangerschaft*). *Osterr Zeit* 9:34, p. 166.

Acute appendicitis during the course of pregnancy, the puerperium and the period of lactation is com-

paratively rare. Among about 26,000 obstetrical cases at the Tenth Gynecological Clinic in Budapest there were 6 cases of appendicitis during pregnancy and 1 case in which the condition occurred during the puerperium. All were operated upon. Of the 6 cases of appendicitis during pregnancy the attack occurred in the third month in 1, in the fourth month in 2, in the fifth month in 2, and at the end of pregnancy in 1. In the first 5 cases, after a normal, smooth postoperative convalescence delivery occurred at term without complications. In the sixth case death resulted from paralytic ileus and peritonitis.

In the case of appendicitis developing in the puerperium operation was performed seven days after delivery. The febrile disease began three days after delivery. The wound healed by secondary intention.

At the beginning of pregnancy the diagnosis of appendicitis is not difficult. As the pregnancy progresses the cecum and the appendix are displaced upward and the diagnosis becomes increasingly more difficult. Palpation of the cecum is prevented by the gravid uterus. The diagnosis is rendered difficult also by the similarity of the symptoms of appendicitis and pregnancy—nausea, vomiting, pain in the lower part of the abdomen, and constipation.

In the differential diagnosis, inflammatory conditions of the genital organs, torsion of the pedicle of a cystic tumor, ectopic pregnancy, pyelitis, gravidarum, and, in rare instances, cholelithiasis must be considered. The prognosis depends upon the severity of the disease.

In the presence of pregnancy the prognosis of appendicitis is generally less favorable. In the simple catarrhal inflammations of the appendix the prognosis for both the mother and the child is better than in cases with perforation. In the latter the fetus usually dies.

Therapeutically surgical rules should be followed. Surgeons favor early operation. French, American, German, and English surgeons advocate conservative procedures. According to experience, the results are best when operation is performed within the first forty-eight hours.

The advisability of interrupting the pregnancy depends upon the severity of the disease. In cases of simple catarrhal inflammation the pregnancy can be preserved. Opium should be administered before and after the operation to prevent labor pains. When abscesses are formed it is difficult to preserve the pregnancy as the uterus is involved in the walling off of the abscesses. Preservation of the pregnancy is difficult also when peritonitis has developed. Under such circumstances interruption of the pregnancy is advisable. Of the operations, vaginal cesarean section is worthy of recommendation.

Appendicitis during the puerperium is a serious disease. The prognosis is grave, perhaps even more unfavorable than that of appendicitis during pregnancy.

In conclusion the author emphasizes that in cases of acute appendicitis it is advisable to operate even when the clinical signs are not very severe. This is true particularly in the second half of pregnancy. Early diagnosis is of special importance.

EMERICH ILIUS (Z)

Stander H J and Cadden J F. Acute Yellow Atrophy of the Liver in Pregnancy. *Am J Obst & Gynec* 1934 xviii 61

The authors report a case of acute yellow atrophy of the liver occurring in a woman at term. The initial symptoms—vomiting, dizziness, and head ache—appeared four days before the patient entered the hospital and seven days before she died.

The treatment of choice of acute yellow atrophy of the liver is the early administration of massive doses of glucose. If acidosis develops, alkali therapy is indicated. When large amounts of glucose are administered, the urine should be constantly studied for the presence of glucose, diacetic acid and acetone. If ketosis develops, the amount of glucose given must be reduced. A reduction in the amount of glucose administered is indicated also when glucose is spilled into the urine.

In the case reported the chemical findings in the blood and urine were consistent with injury to the liver and similar to those following partial removal of the liver in dogs. The findings of pathological examination showed advanced fatty degeneration throughout the entire lobe extending from the central vein to the portal spaces.

EDWARD L. CORNELL, M D

LABOR AND ITS COMPLICATIONS

León J: Ascent of the Presenting Part During Labor (El ascenso de la presentación fetal en el parto). *Bol Soc de obst y ginec de Buenos Aires* 1934, xlii, 74

León limits his discussion to parturient women with intact membranes in whom, in the second phase of the dilating stage, a vertex presentation, already engaged, rises above the superior strait. He reports an illustrative case. The patient was a para II twenty-one years of age. After nineteen hours of apparently normal labor the rather small head was engaged and well flexed and the cervix effaced and dilated to 8 cm. The sac was intact and very flat. An hour later the head was scarcely engaged. The amniotic fluid was somewhat increased. After artificial rupture of the membranes the head engaged immediately and labor was completed spontaneously within an hour.

According to the author's theory there is an initial distention of the inferior segment of the uterus due either to structural deficiency, or to functional paralysis. The amniotic fluid is then pushed down

alongside the head a voluminous pouch being formed. The rise of the head is brought about during a contraction by a chock en retour according to the laws of hydrostatics in a closed cavity. The head is thus held suspended in the axis of all the centripetal forces. The inferior segment of the uterus having yielded, the head is no longer fixed in flexion and by its potential energy rises to the superior strait in an indifferent position. A small head and a normal or slightly increased quantity of fluid favor ascent. Immediate engagement of the head after artificial rupture of the membranes proves that integrity of the membranes can cause ascent of the engaged head as well as hinder its descent. Further studies are necessary to determine whether underlying the mechanism, there is a single basic factor causing distention of the inferior segment of the uterus hindering spontaneous rupture of the membranes and delaying dilatation of the cervix.

The article contains a bibliography.

M E MORSE, M D

Tucker B E and Benaron H B W. Parasacral Anesthesia in Obstetrics. *Am J Obst & Gynec* 1934 xxvi, 850

Experience with parasacral anesthesia in fifty operative obstetrical cases is reported.

Parasacral anesthesia is practical for major obstetrical procedures. The injection is followed by relaxation of the uterus for from fifteen to twenty minutes. In some cases the anesthesia is sufficient for version and extraction, manual rotation of a posterior head and the Pinard maneuver to bring down a foot in single breech presentation. It is of value in breech deliveries, giving marked relaxation of the entire pelvic floor and thus facilitating all the maneuvers for extraction of the aftercoming arms and head. Episiotomy and perineorrhaphy, Duhrssen's incisions, and trachelorrhaphy are rendered painless. Traction pain is abolished and difficult forceps extractions can be done painlessly with the added advantage that the mother's auxiliary powers may be utilized.

The engaged head offers no obstacles to the induction of this type of anesthesia. There is no appreciable alteration of the blood pressure or pulse rate, and the procedure is unattended by signs of shock or collapse. In six of the cases reviewed the blood loss was above normal. The puerperium was in no way affected by the procedure. In two cases the anesthesia failed completely. In seven cases local infiltration was necessary in addition for episiotomy and repair.

In a teaching clinic, where of necessity the duration of an operation is prolonged, parasacral anesthesia is more satisfactory than inhalation anesthesia. It is a valuable adjunct to the armamentarium of the obstetrician especially when the use of an inhalation anesthetic is contra indicated. It produces minimal shock. Its particular sphere is the class of cases requiring a difficult time-consuming operative procedure.

EDWARD L. CORNELL, M D

PUERPERIUM AND ITS COMPLICATIONS

Rogosin, V.: A New Method for Removal of the Placenta Based upon Mechanical Laws and the Prophylactic Active Management of the Third Stage of Labor (Eine neue auf den Gesetzen der Mechanik begründete Methode der Nachgeburtslösung sowie die prophylaktisch-aktive Nachgeburtsbehandlung). *Gesetz* 1934, 4, 29.

The frequent blood losses of from 300 to 500 c. cm. in conservative management of the third stage of labor demonstrates that the management of this stage must be improved. The author therefore suggests a new method for the removal of the placenta.

With the right hand the umbilical cord is grasped with a Kocher forceps and gently pulled downward. With the left hand the uterus is grasped through the abdominal wall at approximately the level of the lower uterine segments and pushed upward with short, sharp thrusts. The thrusts are repeated at intervals of one second. Bearing-down efforts by the woman are contra-indicated as complete relaxation of the abdominal walls is necessary for a firm grasp on the uterus. After from five to ten thrusts the hand which grasps the uterus can distinctly feel the placenta slip through the birth canal and a strong uterine contraction occurs. Only the membranes then remain in the uterus. These are separated from their connection to the uterine wall by a steady pull on the umbilical cord and the entire placenta is then removed from the vagina.

This method was employed in 123 cases. The blood loss was minimal in comparison with that occurring with the use of the older expectant methods, a craving only 50 gm. Of the cases in which it was used immediately after birth of the child, it failed in only 1 per cent. With delay disturbances in the separation mechanism develop readily as a result of incarceration of the placenta by irregular uterine contractions. The method differs from previous manual methods chiefly in that it renders possible the removal of the unseparated as well as the separated placenta. There is no danger of uterine inversion as the uterine wall is not deformed by the jerky short thrusts and the force is applied directly to the tissue connecting the placenta with the uterine wall.

The article includes diagrams and a discussion of the mechanical laws involved in the procedure described.

VON KROAZZ (G)

Torrance, C. C.: Experimental Studies of Puerperal Infection. I. The Susceptibility of Pregnant Mice to Intrapertoneal Inoculations of Hemolytic Streptococci. II. A Study of the Survival of Hemolytic Streptococci in the Vagina of Rabbits During Pregnancy. *Am. J. Obst. & Gynec.* 1934, LVII, 865.

In the experiments carried out by the author on mice, pregnant white mice were found to be more susceptible to the intraperitoneal inoculation of streptococci than non-pregnant mice.

In the experiments on rabbits, a virulent streptococcus was eliminated from the vagina of normal animals in a remarkably short time. This elimination was apparently not dependent upon the hydrogen-ion concentration of the vaginal secretion. When, after repeated implantations, virulent hemolytic streptococci established themselves in the vagina their pathogenicity and hemolytic activity were decreased. After artificial cultivation and animal passage, they recovered both of these properties.

EDWARD L. CONNELL, M.D.

Pery, G.: Surgical Treatment of Puerperal Infections (Traitement chirurgical des infections puerpérales). *J. de méd. de Bordeaux* 1934, CV, 371.

Pery points out that puerperal infection may be caused by any pathogenic bacterium. The organisms most frequently found are the streptococcus, staphylococcus, enterococcus, gonococcus, colon bacillus, and certain anaerobic organisms.

Puerperal infection is of the following types: (1) vulvovaginal infection, (2) uterine infection, (3) peritoneal infection, (4) peritonitis, (5) venous infection (phlebitis) and (6) septicæmia.

Uterine infection differs considerably according to whether it followed delivery at term or abortion. For the treatment of postpartum infections no definite rules can be laid down as each case must be cared for according to the indications it presents. The author urges conservatism. Any placental fragments should be removed manually with great gentleness and care. In a few cases hysterectomy by the abdominal route is necessary.

In cases of puerperal infection following abortion, hysterectomy should be done when the fever and chills persist without evidence of localization of the infection and when uterine gangrene appears.

Perforative infections (pelvic peritonitis, pelvic cellulitis, and salpingitis) should be treated conservatively by rest in bed, the application of ice to the abdomen and vaccine therapy unless signs of suppuration necessitate drainage.

Seven cases of puerperal infection are reported.

MARION W. POOLE, M.D.

NEWBORN

Næslund, J.: Investigations of the Fibrin Content of the Blood of the Newborn With Special Reference to Temporary Haemophilus Neonatorum (Untersuchungen über den Fibrinogengehalt des Blutes bei Neugeborenen unter besonderer Berücksichtigung der Verhältnisse bei Haemophilus neonatorum temporaria). *Acta obst. et gynec. Scand.* 1934, XI, 143.

According to the findings of the investigation reported the amount of fibrinogen contained in the blood of healthy children at birth is low (mean value 1.4 per cent) but rises rapidly to above 3 per cent at the end of a week. The rise in the first few days after birth cannot be due to loss of water alone as the amount of serum albumin and consequently of water seems to undergo no change.

In the cases of sick children which the author had the opportunity to examine, particularly those exhibiting an increased tendency to bleed, the amount of fibrinogen generally remained lower than in healthy children of the same age and the power of coagulation of the blood was considerably lower. Næslund believes that the low fibrinogen content and the lowered power of coagulation of the blood of children suffering from hæmophilia neonatorum temporaria are probably to be regarded as causative of the condition, although other factors such as a change in the amount of calcium and fluoride contained in the blood and the degree of oxygenation of the blood may play a part. He concludes also that the favorable effect of transfusion on children with an increased tendency to bleed may possibly be explained by the increase in the amount of fibrinogen and the power of coagulation of the blood.

Rogers, G.: Hæmoperitoneum Resulting from Hepatic Birth Traumatism. *Am J Obst & Gynec* 1934 xvii 841

The chief factor in the production of hæmorrhages from the liver and ruptures of the hepatic parenchyma in the newborn is compression of the fetal liver. This type of trauma is not uncommon, often being produced by a doubling of the fetus in podalic version or by improperly directed traction during a breech extraction.

Early diagnosis is essential if the infant is to survive. To date only one case in which surgical treatment was instituted in time to save life has been reported.

In the diagnosis the case history and the size of the infant are of special importance. Death occurs either immediately or on the third or fourth day of life. Immediate death may be due to a sudden large intraperitoneal hæmorrhage. As a rule such a hæmorrhage is first diagnosed at autopsy. Death occurring three or four days after birth may be due to laceration of the capsule covering a subcapsular hæmatoma or the dislodgment of a clot formed previously in a parenchymal tear.

The condition is usually manifested by marked pallor, restlessness, a cry indicating pain, a subnormal temperature, perspiration, shallow and labored breathing and abdominal distention with possibly in advanced cases, a fluid wave.

The author emphasizes that in any case in which an intraperitoneal hæmorrhage is suspected abdominal paracentesis is a safe and reasonably accurate diagnostic procedure.

The first and most important step in the treatment is the immediate transfusion of citrated blood. The active surgical treatment indicated is exposure of the bleeding point and the establishment of hæmostasis by suture and pack.

EDWARD L. CORNELL, M.D.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY AND URETER

Cicert, C. and Gabrielli, S. Immediate and Late Effects of Unilateral and Bilateral Denervation of the Suprarenals on the Blood Sugar Curve and the Blood Pressure (Effetti immediati e lontani sulla curva glicemica e sulla pressione arteriosa della denervazione monolaterale e bilaterale dell'adrenali). *Arch. ital. di chir.* 1934, VIII, 47

The authors report three cases of diabetes treated by denervation of one or both suprarenals. The alimentary hyperglycemia and the pharmacodynamic reactions were determined before and after the operation and the patients followed up for more than a year.

In the first case a condition of hypertonia of the sympathetic system had caused gangrene of the left leg and disturbances in the regulation of the blood sugar. Denervation of the left suprarenal resulted in a decided improvement of the glycogen regulation which persisted for fourteen months. There was no effect on the blood pressure. After a transitory decrease the pressure rose again to its pre-operative level.

In the second case the diabetes was of a mild form. Denervation of the suprarenal was performed first on one side and then on the other. Interesting changes were noted in the blood pressure and alimentary hyperglycemia at different periods after the operations. After a year the tolerance for alimentary sugar was increased, the fasting glycemia was normal, and there was a visible lowering of the blood pressure curve particularly of the maximum values.

The third patient had a particularly severe form of diabetes. Bilateral denervation of the suprarenals brought about improvement which lasted about three months. At the end of that time the effect gradually passed off until, about fifteen months after the denervation of the second suprarenal, the alimentary hyperglycemia was about what it had been before the operation. However there was still a marked improvement in the clinical symptoms. The patient was particularly sensitive to the action of insulin.

ADOLFO GOMI MORGAN, M.D.

Roux Berger, J. L., Naulleau, J., and Contades, X. J.: A Malignant Tumor of the Suprarenal Cortex; Aortography, Resection of the Tumor; Surgical Cure (Cortico-surrénalome malin, aortographie extrinsèque guérison opératoire). *Bull. de méd. Soc. nat. de chir.* 1934, LV, 79.

The authors report in detail a case of malignant tumor of the suprarenal cortex which was unaccompanied by hypertension. The patient, a woman fifty-six years of age, presented herself with a tumor

in the left lumbar fossa. Inflation of the colon with air indicated that the mass lay behind the colon. Retrograde pyelography disclosed a deformity of the left ureter and depression of the left kidney caudad with torsion. Gastro-intestinal roentgenography showed displacement of the stomach to the right and a notching of the greater curvature. Under local anesthesia an injection of the abdominal aorta was then done by the lumbar route. Forty cubic centimeters of thorotrast were used. The aorta was found curved to the right by the tumor mass. In the course of the injection one of the capsular veins of the tumor was also injected with the contrast medium. This showed the neoplasm to be very vascular as it disclosed many freely anastomosing vessels and numerous blood sinuses. On further roentgen examination the liver and spleen were visualized as the thorotrast remains in these organs. Both of these organs appeared normal.

At operation performed under general anesthesia the tumor was found in the retroperitoneal tissues and the kidney depressed caudadward. The specimen was a pyiform tumor measuring 18 by 14 cm. Histological examination showed it to be epithelial in type with few giant cells. Vacuoles containing leucithin were observed. Mitoses were not prominent, yet the tumor was of a malignant character.

The postoperative period was uneventful. Pyelography showed that the hydronephrosis had cleared up and the kidney had returned to its normal position.

The authors conclude that complete roentgen examination with the introduction of a suitable contrast medium aids materially in establishing an accurate working diagnosis. They have found aortography especially valuable not only for exact localization of the tumor but also for the determination of its character and type.

WILLIAM C. BICK, M.D.

Papin, E.: Lesions of Veins in Relation to the Upper Urinary Tract (Lésions veineuses en rapport avec les voies urinaires supérieures). *Arch. de mal. d. reins et d'organes génito-uri.* 1934, VIII, 17.

The author discusses varices of the upper urinary tract phlebectasis in contact with the ureter and normal and abnormal veins interfering with the function of the ureter.

Attention is called to the fact that varices of the upper urinary tract must be distinguished from the venous distensions associated with renal tumors and from the varices of the renal papillae which are rare and in reality angiomata. The condition considered by the author is a dilatation of the ureteral veins near the kidney which is usually associated with hematuria. The veins may be normal anatomically

or anomalous. Papin reports five cases of each type in detail.

The rôle of these varices in the production of symptoms is rather uncertain. It is possible to say only that varices of the upper urinary tract are sometimes found in association with renal pain and hematuria. In all of the cases reviewed the symptoms were those of pyelitis or slight hydronephrosis, generally the latter. The author not only resected the veins but performed a decapsulation in four cases, a nephropexy in seven cases, a denervation in one case, and resection of the pelvis with transrenal drainage.

On roentgenographic examination, shadows resembling those of calculi are often seen. Calculi may be suggested also by ureteral pain. The author therefore believes that occasionally the contact of a phlebolith with the ureter may be a cause of symptoms. In support of this theory he cites the case of a woman fifty three years of age who suffered from an enlarged painful left kidney, nocturia, dysuria, and bacilluria. For some time the diagnosis rested between calculus and phlebolith. After four months of expectant treatment without the passage of a stone, exploration was done. A phlebolith lodged in contact with the ureter was found proximal to the broad ligament. Removal of the phlebolith was followed by relief of the symptoms.

Bands, adhesions and venous membranes arising from inflammatory conditions of the veins are occasionally seen. In one case adhesions following hysterectomy caused ureteral kinking. In another the ureter was crossed at its origin by a large supplementary ovarian vein and a venous veil extending to the lower pole of the kidney and there was a moderate hydronephrosis. Following resection of the veil the symptoms were relieved.

ALBERT F. DE GROOT, M.D.

Bugbee H. G.: Renal Tuberculosis as a Local Manifestation of General Tuberculosis. *J. Urol.* 1934, xxxiii, 1.

Bugbee emphasizes that tuberculosis is a general disease regardless of the location of the lesion and that therefore in the treatment of renal tuberculosis the general condition must be considered more than the local condition. Any surgical procedure is to be regarded as only one step in the cure of tuberculosis. Renal tuberculosis is always a secondary lesion. As it is a blood-borne infection, both kidneys are subjected simultaneously and equally to the possibility of infection. Direct ascent along a normal ureter by a non-motile bacillus does not seem probable. Bugbee believes that the earliest lesions of renal tuberculosis are bilateral and non-destructive and frequently heal. He quotes Lepper and Helmholz as stating that organisms cannot pass through or be filtered through a healthy kidney, and that they always found kidney lesions when bacteria were present in the excreted urine. He says that probably 75 per cent of the earliest renal lesions are in the cortex. They occur in the glomeruli or the tissues between

the tubules. Until they ulcerate into the collecting tubules, tubercle bacilli will not be found in the urine.

Wildbolz believes that the diminution of renal function is a valuable diagnostic aid, while Braasch regards renal tests as undependable.

Bugbee believes that in certain cases of bilateral infection the kidney with the more active infection should be removed to give the other foci a better opportunity to become arrested. He does not remove the involved ureter in all instances.

FRANK M. COCHRAN, M.D.

Travaglini, V.: The Relation of Tuberculosis of the Kidney to Stagnation of Urine. (Sulla tubercolosi del rene in rapporto con la stasi urinaria). *Arch. ital. di chir.* 1934, xxxvi, 295.

There has been a considerable difference of opinion as to the relation between uronephrosis and tuberculosis of the kidney. Some urologists believe that when the two conditions are associated they have no relation to each other; others that the uronephrotic kidney may become infected with tuberculosis; some that the uronephrosis is always secondary to the tuberculosis; and some that the uronephrosis is a protective reaction exerting an effect on the renal tuberculosis similar to that exerted by pneumothorax on tuberculosis of the lung.

Because of this difference of opinion, the author made an experimental study of the problem. He injected cultures of tubercle bacilli into twenty nine rabbits, giving only one injection in order to avoid the defensive immunity produced by repeated injections. In some instances the injections were given before and in some after the production of a uronephrosis by the usual methods. The experiments are reported in detail with colored plates of photomicrographs.

From the histological findings and the results of cultural experiments the author concludes that tuberculous infection may occur in uronephrosis; that the stagnation of urine is of definite importance in favoring the infection; and that the chronic stagnation of urine with resulting sclerosis of the kidney which is seen in ordinary uronephrosis may favor spontaneous cure of the tuberculosis by encapsulating the specific lesions with newly formed connective tissue.

AUDREY Goss MORGAN, M.D.

Shane, J. H. and Harris, M.: Roentgenological Diagnosis of Perinephritic Abscess. *J. Urol.* 1934, xxxiii, 19.

From a review of the literature and a study of the roentgenograms made in forty cases of perinephritic abscess in which operation was performed at the Mayo Clinic the authors conclude that the roentgenographic findings in this condition are a valuable adjunct in the diagnosis. The shadow of the psoas muscle was obliterated to some extent in all cases; some abnormality of the renal shadow was found in thirty three (80.2 per cent) and scoliosis was found in eighteen (45 per cent). Elevation of the dia-

phragm was found in eight (28 per cent) of the thirty-two cases in which a roentgenological examination of the thorax was made. In twenty-two cases (55 per cent) an associated pathological condition was discovered at operation. Stones were present in seventeen (40 per cent). The frequency with which obliteration of the shadow of the psoas muscle occurs on one or both sides and the frequency with which some degree of scoliosis is found in the course of routine roentgenography diminish to some extent the clinical value of these observations. Of the cases reviewed, the shadow of the psoas muscle was obliterated on one side in 10 per cent and on both sides in 3 per cent. Scoliosis was definitely apparent in 3 per cent, but there was a difference of opinion regarding the evidence of this condition in several other roentgenograms.

Of fifty cases of renal calculi in which roentgenograms were studied, some degree of obliteration of the shadow of the psoas muscle or scoliosis was found in over 50 per cent.

The roentgenological signs of perinephritic abscesses, especially obliteration of the shadow of the psoas muscle and scoliosis, do not necessarily indicate the existence of perinephritic abscesses and therefore cannot be regarded as pathognomonic of the condition. However they have a relative importance when considered in conjunction with the clinical manifestations of such abscesses.

McKenzie, C. M., and Kampmeier, O. F.: A Consideration of the Development of Polycystic Kidney. *J. Urol.* 1934, xxvii, 37.

The authors discuss the development of the polycystic kidney on the basis of the embryological development of the kidney. They do not completely accept the theory that the polycystic kidney is due to failure of the uniferous tubules to unite with the collecting ducts as they have been unable to find any positive statement of established evidence supporting it. They divide the developing kidney into the vestigial, the provisional, and the growth zones. They state that there are uniferous tubules for every generation of collecting tubules. When the first collecting tubules sprout from the primitive renal pelvis a corresponding generation of uniferous tubules emerges from the surrounding nephrogenic blastema. These tubules lie adjacent to the renal pelvis and are vestigial from the beginning. They rarely join the neighboring primary collecting ducts and usually disappear later without a trace. They lie in the pelvic area and constitute the vestigial zone.

The next two or three tiers or generations of uniferous tubules correspond to the second, third, and fourth branchings of the collecting ducts, become normally established, and possess well formed coils and glomeruli. They unite early with the collecting ducts, but after a short period they separate from the ducts, some of them expanding cystically to several times their original size and then collapsing and disappearing. This is the provisional zone.

The normally functioning tubules which persist throughout life develop in the outer or growth zone. The cystic formations in the vestigial and provisional zones usually collapse and disappear but occasionally one or more persist throughout life. They have been traced throughout embryonic and later fetal life, and occur in infants and adults.

The authors believe that the explanation of the development of multiple cysts, that is, polycystic kidney is similar to that of the development of solitary cysts.

In conclusion they report a case of polycystic kidney.

FRANK M. COCKRELL, M.D.

Gayet, G., Gabrielle, A., and Martin, J.: Angioma of the Kidney (*L'angome du rein*). *J. Chir. Méd. et Chir.* 1934, xxvii, 297.

Angioma of the kidney is rare. In a review of the literature the author was able to find reports of only twenty-five cases. To these he adds another. His patient was a medical officer who gave a history of a sudden attack of hematuria on March 26, 1923, when he was twenty-three years old. The beginning of the hemorrhage was accompanied by an attack of nephritic colic. The hematuria was copious—from 300 to 400 gm. per day—and persisted for six weeks in spite of various types of hemostatic treatment. From time to time attacks of nephritic colic occurred on the right side. At the end of six weeks the patient was quite anemic, but within a few weeks after cessation of the hemorrhage his blood count was normal. Several cystoscopic examinations showed that the hemorrhage came from the right kidney. All laboratory examinations—chemical and bacteriological examinations of the urine, inoculation of guinea pigs, and determinations of the leukocyte formula, coagulation time, blood urea, Wassermann, Hecht, and Benedek reactions—were negative. The kidneys could not be seen on roentgen examination as they were masked by gas in the large intestine. The function of both kidneys was normal.

In March 1928, the patient had a second attack of hematuria, thereafter attacks occurred at intervals of a few months. An eighth attack occurred on October 18, 1933. Examination had shown a bled ureter on the right side which suggested malformation of the kidney. A tentative diagnosis of polyp of the pelvis or angioma of the kidney was made. Malignant tumor was excluded by the long duration of the disease, and hematitic nephritis by the normal function of the kidneys.

Nephrectomy was performed on November 3. Except for a double pelvis and ureter the kidney appeared normal macroscopically. Histological examination disclosed a hemangioma of the pelvis with interstitial hemorrhage and ulceration of the mucous membrane.

The chief sign of renal angioma is hematuria. Sometimes, as in the author's case, this is accompanied by pain. The hemorrhage may be so copious as to necessitate emergency surgery. The condition

must be differentiated from cancer tuberculosis, and hematuric nephritis.

In the pyelogram in the author's case the upper pelvis was elongated the internal calyx looked as if it had been amputated, and the external calyx appeared long. While these findings did not establish the diagnosis, the author reports them because he believes that descriptions of the findings in a large number of pyelograms in cases of renal angioma will help to establish a more or less characteristic picture.

The only effective treatment of renal angioma to date has been nephrectomy. This was performed in twenty four of the twenty six cases. The author expresses the hope that a more conservative operation may be devised such as nephrotomy with destruction of the small tumor by means of the electric bistoury. After such an operation the patient should be kept under careful observation in order that nephrectomy may be performed secondarily if postoperative hemorrhage occurs.

AUDREY GORN MORGAN M D

Heritage, K.: Spontaneous Circumrenal Hematoma. *Proc Roy Soc Med Lond* 1934 xxvii, 1105

The author reports three cases of extensive extravasation of blood into the kidney bed and surrounding tissues unassociated with trauma. The condition is manifested clinically by pain and the signs of internal abdominal hemorrhage. In the author's opinion treatment by nephrectomy and drainage gives better results than drainage with clot evacuation or expectant treatment.

DOUGLAS K. HIBBS M D

Michel, P.: Partial Traumatic Rupture of the Ureter (Rupture traumatique partielle de l'uretère). *J Urol med et chir* 1934 xxxviii, 458

The patient whose case is reported a man thirty years of age, was severely kicked by a cow in the left abdominal region on January 11 1932. Examination by a physician about thirty minutes later revealed a state of collapse a small and rapid pulse, tenderness of the abdomen, and definite tenderness localized in the left hypochondriac region. The urine discharged a few times after the accident was normal and free from blood. The treatment consisted of bed rest and the application of an ice bag to the abdomen. In order to exclude the possibility of intestinal perforation a surgeon was called in consultation. When the patient was examined that evening by the surgeon the abdomen was soft but the muscles of the left half of the abdomen were tense and the pain extended to the splenic and renal regions. The surgeon decided not to interfere but to keep the patient under observation.

During the following few days the condition gradually improved, and on the eighth day the patient was able to leave his bed. However as the pain in the left half of the abdomen persisted, a roentgen examination of the digestive tract was made one

month after the accident. The findings of this examination were negative.

On February 17 the patient complained for the first time of pain on urination, but urinalysis disclosed no evidence of disease. On the following day he complained of nausea. On examination, the abdomen was found soft but palpation revealed tenderness along the entire course of the left ureter and, deep in the iliac fossa, an elongated and very tender swelling the size of a small hen's egg.

Rest, the administration of urinary antiseptics and the application of an ice bag led to some amelioration of the pain, but the general condition remained poor.

When the patient was examined by the author on February 25 he complained of constant pain in the left side of the abdomen which radiated to the testicle. There was no history of hematuria or dysuria. The appetite was good, the digestive organs functioned normally and there was no fever or melena. The abdomen was soft. Palpation disclosed tenderness along the course of the left ureter especially at the level of the iliac fossa but there was no demonstrable swelling or rigidity. The left kidney was not palpable and there was no tenderness in the lumbar region. The urine was free from pathological elements. On cystoscopic examination the mucosa of the urinary bladder and the discharge of urine from both ureters were found to be normal. Catheterization was carried out without difficulty, the sound meeting no obstruction. The findings of cytobacteriological examination of separate samples of urine from each ureter were absolutely negative. Pyeloureterography on the left side following the injection of 15 c.c. of 30 per cent abrodil revealed, at the lower border of the sacro-iliac articulation, a semilunar diverticulum on the external surface of the left ureter. Repeated examination confirmed this finding. The condition was therefore a true post traumatic ureteral diverticulum.

The treatment of this condition is surgical. In the case reported the patient refused operation and the pain in the left side of the abdomen associated with nausea recurred at irregular intervals. These crises are ascribed by the author to urinary retention conditioned by distention of the diverticulum.

ABRAHAM S. SCHWARTZMAN M D

BLADDER, URETHRA, AND PENIS

Watkins, K. H.: The Clinical Value of Bladder Pressure Estimations. *Brit J Urol* 1934 vi 104

Watkins has found the use of a water manometer of value to distinguish between rises in the bladder pressure due to detrusor contraction and those due to increased abdominal pressure caused by straining. He states that the important readings are those made when sensation is first noticed on filling of the bladder and those made when the pressure is increased by attempted urination. The average amount of distention when sensation is first noticed is normally about 150 c.c.m. but in some cases

phragm was found in eight (38.1 per cent) of the thirty-two cases in which a roentgenological examination of the thorax was made. In twenty-two cases (55 per cent) an associated pathological condition was discovered at operation. Stones were present in seventeen (40.5 per cent). The frequency with which obliteration of the shadow of the psoas muscle occurs on one or both sides and the frequency with which some degree of scoliosis is found in the course of routine roentgenography, diminish to some extent the clinical value of these observations. Of the cases reviewed, the shadow of the psoas muscle was obliterated on one side in 10 per cent and on both sides in 3 per cent. Scoliosis was definitely apparent in 3 per cent but there was a difference of opinion regarding the evidence of this condition in several other roentgenograms.

Of fifty cases of renal calculi in which roentgenograms were studied, some degree of obliteration of the shadow of the psoas muscle or scoliosis was found in over 30 per cent.

The roentgenological signs of perinephritic abscess, especially obliteration of the shadow of the psoas muscle and scoliosis, do not necessarily indicate the existence of perinephritic abscesses and therefore cannot be regarded as pathognomonic of the condition. However they have a relative importance when considered in conjunction with the clinical manifestations of such abscesses.

McKenna, C. M., and Kampmeier, O. F.: A Consideration of the Development of Polycystic Kidney. *J. Urol.* 1934, XXXIV, 37.

The authors discuss the development of the polycystic kidney on the basis of the embryological development of the kidney. They do not completely accept the theory that the polycystic kidney is due to failure of the uniferous tubules to unite with the collecting ducts as they have been unable to find any positive statement of established evidence supporting it. They divide the developing kidney into the vestigial, the provisional, and the growth zones. They state that there are uniferous tubules for every generation of collecting tubules. When the first collecting tubules sprout from the primitive renal pelvis a corresponding generation of uniferous tubules emerges from the surrounding nephrogenic blastema. These tubules lie adjacent to the renal pelvis and are vestigial from the beginning. They rarely join the neighboring primary collecting ducts and usually disappear later without a trace. They lie in the pelvic area and constitute the vestigial zone.

The next two or three tiers or generations of uniferous tubules correspond to the second, third, and fourth branchings of the collecting ducts, become normally established, and possess well-formed coils and glomeruli. They unite early with the collecting ducts, but after a short period they separate from the ducts, some of them expanding cystically to several times their original size and then collapsing and disappearing. This is the provisional zone.

The normally functioning tubules which persist throughout life develop in the outer or growth zone. The cystic formations in the vestigial and provisional zones usually collapse and disappear but occasionally one or more persist throughout life. They have been traced throughout embryonic and later fetal life and occur in infants and adults.

The authors believe that the explanation of the development of multiple cysts, that is, polycystic kidney is similar to that of the development of solitary cysts.

In conclusion they report a case of polycystic kidney.

FRANK M. COCHRAN, M.D.

Geyer, G., Gabriella, A., and Martin, J.: Angioma of the Kidney (L'angiome du rein). *J. d'uról. m/d. ch.* 1934, XXXIV, 397.

Angioma of the kidney is rare. In a review of the literature the author was able to find reports of only twenty-five cases. To these he adds another. His patient was a medical officer who gave a history of a sudden attack of hematuria on March 26, 1933, when he was twenty-three years old. The beginning of the hemorrhage was accompanied by an attack of nephritic colic. The hematuria was copious—from 300 to 400 gm. per day—and persisted for six weeks in spite of various types of hemostatic treatment. From time to time attacks of nephritic colic occurred on the right side. At the end of six weeks the patient was quite anemic, but within a few weeks after cessation of the hemorrhage his blood count was normal. Several cystoscopic examinations showed that the hemorrhage came from the right kidney. All laboratory examinations—chemical and bacteriological examinations of the urine, inoculation of guinea pigs, and determinations of the leucocyte formula, coagulation time, blood urea, Wassermann, Hecht, and Besredka reactions—were negative. The kidneys could not be seen on roentgen examination as they were masked by gas in the large intestine. The function of both kidneys was normal.

In March, 1935 the patient had a second attack of hematuria; thereafter attacks occurred at intervals of a few months. An eighth attack occurred on October 15, 1935. Examination had shown a bifid ureter on the right side which suggested malformation of the kidney. A tentative diagnosis of polyp of the pelvis or angioma of the kidney was made. Malignant tumor was excluded by the long duration of the disease, and hematuric nephritis by the normal function of the kidneys.

Nephrectomy was performed on November 3. Except for a double pelvis and ureter the kidney appeared normal macroscopically. Histological examination disclosed a hemangioma of the pelvis with interstitial hemorrhage and ulceration of the mucous membrane.

The chief sign of renal angioma is hematuria. Sometimes, as in the author's case, this is accompanied by pain. The hemorrhage may be so copious as to necessitate emergency surgery. The condition

2. Sexual desire and power are lessened and tend to disappear at an earlier age.
3. There is a lowering of the metabolism manifested by a tendency to put on fat.
4. The general tone may be slightly less.
5. Mental and physical well-being are unchanged.

ANDREW McNALLY M.D.

Cengiarotti, G. B.: A Contribution to the Study of the Action of Cold on Deep Tissues. The Effects of Freezing on the Testicles (Contributo allo studio dell'azione del freddo sui tessuti profondi. Gli effetti della congelazione sui testicoli) *Arch Ital di chir.* 1934 xiii 397.

Cold was applied to the testicles of rabbits by means of an ethyl chloride spray. In some cases the spray was applied to the scrotum and in others directly to the testicles after opening of the scrotum. The animals were killed after varying periods of

time and the testicles were examined with the microscope.

When the cold was applied for only two minutes it caused irritation with desquamation of epithelium of the tubules near the surface of the organ and swelling and increased connective tissue proliferation of the interstitial tissue near the surface. When it was applied for five minutes it caused necrosis of a superficial layer 2 or 3 mm. deep from freezing of the tissues. When it was applied for ten minutes the whole organ was frozen. When the scrotum was not opened the lesions differed only in degree.

The authors attribute the superficial lesions directly to the cold and the deep lesions to changes in the circulation brought about by the cold. When the animals were allowed to live the frozen testicles later underwent a diffuse connective tissue sclerosis and in some cases showed a deposition of calcium.

ANDREW GOES MORROW M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS, MUSCLES TENDONS, ETC.

Watson Jones, R. W. and Roberts, R. E.: Calcification, Decalcification, and Ossification *Brit J Radiol* 1934, 2, 331-39

The authors summarize the correlation between the pathological, clinical, and roentgenological features of normal and abnormal calcification, decalcification, and ossification.

They regard the osteoblast as a cell no longer endowed with the specific power of laying down bone. They believe that the early undifferentiated mesenchyme of the embryo forms a common mesoblastic stem from which may develop fibrous tissue, cartilage or bone and that the cells of these tissues are strictly comparable. After preliminary dedifferentiation to the state of primitive mesenchyme any of these tissues may be built up again in the form of one of the other tissues. For example, when the endocrine balance is disturbed as in hypoparathyroidism, skeletal bone may be dedifferentiated only to reappear as fibrous tissue. The authors agree with the theory of Leriche and Poliard that the only factor necessary to determine bone as the ultimate destiny of a mass of primitive mesenchyme is an excess of calcium with an adequate blood supply.

The mechanism of the deposition of calcium in the mesenchymatous tissues is a physicochemical problem. It is probable that the calcium is not separately precipitated in the form of calcium carbonate, calcium phosphate, and other salts, but that the bone salt is a complex molecule holding in combination magnesium, sodium, potassium, chloride, fluoride and hydroxyl groups. Robson has shown that tissues which normally become the site of calcareous deposits contain an enzyme, phosphatase, which hydrolyzes the ester and sets free inorganic phosphorus. The activity of the enzyme is dependent upon the hydrogen ion concentration of the tissue fluids.

Whatever may be the association between impaired vascularity, phosphatase activity and calcification, it is definitely reversible. When the blood supply to a bone is decreased, the bone undergoes increased calcification, and when the blood supply is increased the bone undergoes decalcification.

Very complete decalcification may be seen in the presence of infection of neighboring parts, but it is important to recognize that the loss of calcium under such circumstances may be due entirely to hyperemia and not to infection of the bone itself.

Delay in the consolidation of fractures is frequently due to the decalcification of tissue. Therefore delayed union of leg fractures may often be corrected by simple weight-bearing in a splint or plaster which

balances the functional activity of the limb with the arterial blood supply thereby preventing further decalcification and leading to recalcification.

The authors believe that the only factor of importance in the causation of non-union is inadequate immobilization. When the fragments are imperfectly immobilized the constant shearing and twisting strains rupture the capillaries between them, interrupt the continuity of the developing connective tissue and give rise to a constantly recurring hyperemia which causes decalcification of the bone ends.

In the infected compound fracture there is still more decalcification as the initial hyperemia of trauma is continued by the hyperemia of infection and the treatment of the infection is quite often allowed to interfere with the immobilization. The Orr treatment of compound fractures has helped to overcome the difficulty not only by maintaining absolute immobilization despite the presence of infection, but also by reducing the loss of calcium by reducing the discharge.

In discussing the transplantation of bone the authors state that the active growth of the graft cannot continue after the first few hours unless the survival of the cells of the graft is assured by revascularization.

In the healing of bone after infection or injury the initial decalcification of hyperemia is followed by the recalcification and sclerosis resulting from a reduction of the blood supply. This is evidenced by the dense bone in the region of a well-consolidated fracture.

In discussing the clinical significance of ischemic calcification of bone the authors consider the fragility of bone in Albers-Schoenberg's, Kienboch's, Preiser's, Koehler's, and Freiberg's disease.

In discussing the clinical significance of pathological calcification they cite the calcareous masses seen on the outer aspect of the shoulder joint which develop in the supraspinatus tendon. They state that it is not remarkable that of all the tendons in the body the supraspinatus tendon undergoes this change most commonly as it is the only tendon in which there is normally constant compression against bone. They advise evacuating the masses by incision.

Attention is called to the fact that in Raymond's disease, calcification occurs most constantly in the terminal phalanges where there is normally a preponderance of fibrous tissue and the impairment of vascularity will be most marked. The fibrosis may be increased by the organization of thrombi in small angiomata.

Calcification occurring in intervertebral disks and semilunar cartilages may be explained similarly.

Peter C. COLVET, M.D.

Graver L. F. and Copeland M. M.: *Changes in the Bone in Hodgkin's Granuloma Arch Surg* 1934, LVIII 1062

Of 172 cases of Hodgkin's granuloma in which the diagnosis was proved by biopsy or autopsy, changes in the bones varying from highly fibrotic granulomatous to marked sarcomatous lesions were found in 27 (15.7 per cent). The time of onset of the osseous changes following the onset of the disease was variable, but there was no correlation between the severity of the osseous involvement and early or late termination of the disease.

The majority of the patients were between seven and forty years of age. The incidence of the condition was about the same in males and females.

Demonstrable invasion of the bones was preceded by pain of a dull aching or severe lancinating type. The pain is produced by invasion of the nerve roots pressure on a nerve or destruction of bone.

Compression of the spinal cord was found in 5 cases. This was manifested clinically by weakness of the extremities below the compression, paraplegia, anesthesia along the distribution of the affected nerve, girdle hyperesthesia and numbness of varying degree in the distal portions of the extremities. Spastic paralysis was an early feature in many cases. In 2 cases, herpes zoster occurred, but lesions of the vertebrae at the level of that condition could not be found although the mediastinal nodes were involved. Abdominal pain was referred from nerves compressed by diseased vertebrae or by gastric obstruction by enlarged retroperitoneal nodes.

The bone involvement caused no variation in the temperature. In the cases in which the urine was examined for Bence Jones protein the findings were negative. The blood picture was either normal or showed some degree of secondary anemia.

According to the literature the bones most frequently involved are the vertebrae, sternum, pelvis, femur, ribs, skull, humerus, scapula, and clavicle, but in the cases reviewed by the authors the changes were found most often in the bones of the spine and pelvis. Pathological fracture was rare but collapse, especially of the vertebrae, was common.

The lesions shown by roentgenograms were predominantly either osteoplastic or osteoblastic. They usually occurred first in the portions of the bones still containing active (red) marrow as the disease appears early in hematopoietic tissues. Progression of the disease increased the lytic or plastic processes in the bones. In many cases both processes occurred at the same time. In the ribs the lesions looked like metastatic processes. In 1 case a bone cyst was simulated. When the vertebrae were involved the intervertebral disks were usually unaffected unless they were crushed or broken by collapse of the vertebral bodies. Subperiosteal proliferation was often associated with collapse of the bone. Osteoarthritis of the spine was sometimes seen in the early stages before the disease had become destructive.

Hodgkin's granuloma affecting bone is to be differentiated from metastatic carcinoma, lympho-

sarcoma, leukemic deposits, certain phases of Ewing's tumor, and various forms of osteomyelitis.

The only effective palliative treatment is irradiation, preferably with the roentgen rays. The various methods of irradiation are: (1) the administration of single heavy doses to all lymph node areas, (2) the administration of fractional protracted doses to all areas, and (3) symptomatic treatment of involved areas only. The first method is not always well tolerated. Failure to secure relief in the past was often due to neglect of treatment of the deeper nodes.

RUDOLPH S. RITCH, M.D.

Nichols, B. H. and Shifflett, E. L.: *Osteopolkilosis. Report of an Unusual Case. Am J Roentgenol* 1934, XXIII, 53

Since osteopolkilosis was first described by Albers-Schoenberg in 1915 about twenty cases have been reported in the literature. These show no particular age or sex incidence, but suggest a hereditary factor. The condition has been found associated with diabetes, tuberculosis, and typhoid fever.

In the recorded cases it produced no symptoms and was discovered incidentally during examination for some other condition. Roentgenograms show multiple disseminated areas of increased density in the spongiosa of the bone which vary in shape from round to oval and in size from that of a pinhead to several centimeters in diameter. Involvement of all bones except those of the skull has been reported. Newcomet called the areas of increased density extending from the cortex of the bone inward "endostoses." The lesions apparently do not increase in size. According to Schmorl's pathological description the areas of increased density are small jagged osteomata-like formations entering the trabeculae of the spongiosa as nodular poorly defined formations. Joint surfaces are not involved. The areas appear more like compact bone than spongiosa.

Histological study did not permit definite conclusions regarding the genesis of the trabeculae. Schmorl thought they arose from the fibrous portion of the bone marrow. An endochondral origin was ruled out because the areas of increased density were not connected with cartilaginous anlagen. Rickets was not considered a probable factor. Schmorl concluded that osteopolkilosis is due to congenital anlagen.

The case reported by the authors is that of a woman thirty-five years old who has been under observation for seventeen years. In 1916 a diagnosis of hypoparathyroidism with multiple osteomata and numerous calcium deposits on the bones was made, and in 1926 and 1931 a diagnosis of hypoparathyroidism and hypothyroidism. The symptoms were pain in the feet and legs and headache. In 1916 the metatarsals and metacarpals, which were extremely sensitive, became swollen and thickened. Roentgenograms showed multiple osteochondromata with at least one lesion resembling a cyst, multiple disseminated areas of increased bone density characteristic of osteopolkilosis, and a definite marked

proliferative periostitis of the long bones and the bones of the hands and feet. The pain was relieved by treatment with a pituitary preparation.

In 1926 the patient gained weight, her breasts became large, pads of fat appeared over the hips, the bone and joint pains became worse, the urine showed a trace of albumin and a few pus cells, and nocturia dyspnoea, and oedema of the feet and ankles developed. Glucose tolerance tests showed a pre-diabetic curve. The basal metabolism was -7 per cent. There was no appreciable roentgenological change except the development of additional exostoses and periosteal proliferations.

The administration of thyroid extract and whole pituitary gland supplemented by general medical treatment resulted in no definite or constant relief of the symptoms. (R. DOUGLAS S. RABIN, M.D.)

Ballisat E. Actinomycosis of Bone (L. actinomycosis osseae) *Re med del Suiss Rom* 1934, No 5, 508.

The parasite causing actinomycosis in cattle was discovered by Rivolta in 1803. It was found in man by Israel in 1878. In cattle it usually affects the bones, but in man involvement of the bones is exceptional (70 of 400 cases reported in the literature). The lesion may arise by extension or metastases. The author reports 3 cases of bone involvement.

The first case was that of a man of forty nine years who complained of generalized fatigue and pain which began several months after a prolonged cough and gradually increased. A few months later swelling developed in the feet and left calf. When the swellings were incised, pus was evacuated. The patient was finally sent to the hospital with multiple abscesses. Pus from abscesses under the scapula in the throat over the thyroid, and in the axilla, left calf and chest showed streptococci, staphylococci, and the gram positive filaments of actinomycetes. The apex of the right lung showed an opacity, and there was a persistent cough. The organisms found in the multiple abscesses were found also in the sputum. The patient died about nine months after the onset of the symptoms. Autopsy disclosed abscesses in the locations mentioned and also in the right lung and around the upper thoracic vertebrae. The first 3 thoracic vertebrae were softened and surrounded by pus, and there was a cavity connected by a sinus to the skin. Microscopic examination of these vertebrae showed actinomycetes in the center of the miliar abscesses. An excess of haemorrhoids was found around these bone abscesses and also in the lesions on the feet.

The second case, which was an example of spreading by extension was that of a man forty nine years of age who entered the hospital with a cough and rapidly increasing weakness and cachexia and died three months after the beginning of the symptoms. A clinical diagnosis of pulmonary tuberculosis was made, but autopsy showed abscesses near the seventh and eighth thoracic vertebrae connecting with a large retropharyngeal abscess and an inter-

lobar abscess in the right lung, and almost complete destruction of the seventh lumbar vertebra with a pronounced kyphosis at the level of that vertebra. The granules and filaments of actinomycetes were found in all of the abscesses.

In the third case the bone involvement was metastatic. The patient was a man forty four years old who sustained a slight wound of the sole of the left foot while walking barefooted. The injury was followed first by an abscess at the site of the injury and at the ankle. Six weeks later abscesses developed in the right scapular and pectoral regions. When the abscesses were incised they yielded pus in which actinomycetes were found. A week later cough, rales, and dullness in the right lung developed. The roentgenogram showed a dense opacity in the upper half of the right lung, and gram positive filaments were found in the sputum. Death occurred suddenly from pulmonary embolism about four months after the development of the initial lesion. Autopsy disclosed abscesses in the bodies of the eleventh and twelfth thoracic vertebrae, the left heel, the lungs, and abdominal viscera. All of the abscesses contained the granules and filaments of actinomycetes.

The portal of entry of the organisms is usually the digestive tract, less frequently the lungs, and rarely the skin. The author cites cases of extension from the sphenoid bone to the cranium, from the throat to the ear, from the appendix to the lumbar vertebrae and from the lung to the kidney and third lumbar vertebra. The vertebrae are the most frequent site of bone involvement, vertebral foci constituting 40 per cent of all skeletal lesions.

Metastases occur through the vascular system more often than through the lymphatics. According to Wertheimann, a primary lesion in the lungs metastasizes most frequently to the liver, spleen, kidneys, brain, and skin, and a primary lesion in the intestines metastasizes most frequently to the myocardium, muscles, skeleton, and meninges in the order named.

The lesions often seen in the jaw have their origin in an osteomyelitis around devitalized teeth. They are usually not noticed until a swelling forms in the submaxillary or parotid region. In general, the lesions in the bone begin at the periphery. First the periosteum is destroyed and then the bone is gradually eroded. The infection reaches the medullary canal through the haversian canals. As a rule the shape of the bone is preserved, but in the vertebral bodies the weakness sometimes causes kyphosis. If the disease becomes chronic, osteophytes may be formed, but as a rule there is a progressive destruction and death occurs before bone regeneration can take place. (WILLIAM ARTHUR CLARK, M.D.)

Carter R. A.: Infectious Granulomata of Bones and Joints, with Special Reference to Coccioid Granuloma. *Radology* 1934 XXXI, 1.

The author discusses coccioid granuloma of bones and joints on the basis of seventy cases. He describes the findings in involvement of the knee

ankle, wrist, hip, shoulder, skull, ribs, sternum, vertebrae, and pelvis and compares the manifestations of coccidioidal infections of the skeleton with those of blastomycosis, actinomycosis, torulosis, mycetoma, tuberculosis, leprosy, osteomyelitis, infectious arthritis, and syphilis.

He states that coccidioidal infection produces a rather bizarre group of lesions. In the skeletal system it involves the tibia most frequently and the patella next most frequently. Involvement of bones and joints is usually accompanied by manifestations of the infection elsewhere. As in many cases the condition has a pulmonary onset, a roentgenogram of the chest may be of diagnostic aid. Cutaneous involvement and cervical adenopathy are common. A positive diagnosis depends upon identification of the organism and in some cases this requires repeated animal inoculation.

PAUL C. COLONNA, M.D.

Lindén, O.: A Case of Osteitis Fibrosa Generalisata with a Well Marked Tendency Toward Spontaneous Cure. *Acta radiol.* 1934, xv, 503.

When first examined by the author in 1929 the patient whose case is reported was twenty years old. He complained of pain in the back, marked weakness in the back and legs, and general lassitude. The blood calcium was 15 mgm per 100 c.cm. Roentgen examination of the skeleton disclosed areas of rarefaction in the pelvis, some of the vertebrae, and the ribs. As these were interpreted as being due to tumor metastases, no treatment was prescribed.

During the following six months considerable spontaneous improvement in the symptoms occurred, the patient becoming able to walk quite well without support and able to return to work. Roentgen examination disclosed progressive healing in the involved bones. However when the patient was last seen, the blood calcium was still 15 mgm per 100 c.cm. No operation was performed and there were apparently no physical signs of a parathyroid tumor.

LESTER R. DRACOSTER, M.D.

Copher, G. H. and Key, J. A.: The Influence of Bladder Transplants on the Healing of Defects of Bone. *Arch Surg.* 1934, xlv, 64.

Copher and Key report a series of experiments on sixteen dogs in which the epithelium of the bladder was used to stimulate osteogenesis in large bone defects in the ulna.

The results indicate that the presence of a growing transplant of epithelium from the bladder tends to stimulate osteogenesis in a bone defect and cause it to be bridged by new bone under circumstances which would ordinarily result in non-union.

The technique of the operation consisted in simply exposing the ulna, splitting the periosteum and removing a section of the shaft. No effort was made to determine how wide a defect could be bridged by bone under the influence of the bladder transplant. In fourteen of sixteen control dogs the same oper-

ation was followed by non union. The bladder transplants not only produced new bone to fill in the defect but tended to prevent atrophy of the ends of the fragments.

In experiments in which bladder epithelium was placed in the abdominal wall marked proliferation of the bladder epithelium and beginning formation of cysts were found in the seven-day specimens. New bone was found first in the twenty-eight day specimens. The authors are unable to explain the mechanism by which the bladder transplant causes the formation of bone but suggest that the process is due to the presence of a local excess of calcium secreted by the epithelial cells of the transplant.

PAUL C. COLONNA, M.D.

Van Schrlick, F. G.: A Contribution to the Problem of Chondrodystrophy (Ein Beitrag zu dem Problem Chondrodystrophie). *Zschr. f. orthop. Chir.* 1934, lx, 387.

The patient whose case is reported was twenty three years old. His state of nutrition was good. The subcutaneous fatty tissue was abundant and there was marked prominence of the capillaries of the skin of the buttocks. Intelligence was almost entirely lacking and speech was not intelligible. The patient did not learn to walk until he was two and a half years old or to talk until he was six years old. The size of his body was not determinable as he was unable to stand alone. All of his joints were in the flexed position, there was a hip contracture of 140 degrees and spasms prevented passive extension. The pubic region and axillae were hairless. The normally sized head was brachycephalic, the nose was broad and the teeth were widely placed. The neck was short, thick, and plump. The thyroid gland was not palpable. The thorax was slightly wedge shaped and free from signs of rachitis. The testicles were well developed. The spinal column was slightly lordotic in the thoracic portion. Over the sacrum there was a sharply angulated lordosis due to the subluxation of the hip joints and between the twelfth thoracic and the third lumbar vertebrae there was a sharply angulated kyphosis. The feet were small. The left foot showed slight clubfoot and the right, slight flatfoot. The arms were relatively short, the hands small and the fingers short. Walking was impossible.

The patient's maternal grandfather was an alcohol addict. His mother had an infantile expression and stuttered. The other members of the family and the paternal family were healthy. One brother died at twenty months of age of convulsions and a sister was an imbecile. The oldest brother was healthy and normally developed.

When the patient was ten years old he had a rachitic chicken breast, rachitic deformity of the extremities, a waddling gait, and a marked lanugo on the back, especially in the sacral region.

A lateral roentgenogram showed marked pneumatization of the facial portion of the skull, a small os tribasilare with dense shadows and an almost

proliferative periostitis of the long bones and the bones of the hands and feet. The pain was relieved by treatment with a pituitary preparation.

In 1926 the patient gained weight, her breasts became large, pads of fat appeared over the hips, the bone and joint pains became worse, the urine showed a trace of albumin and a few pus cells, and nocturia, dyspnea, and edema of the feet and ankles developed. Glucose tolerance tests showed a pre-diabetic curve. The basal metabolism was -7 per cent. There was no appreciable roentgenological change except the development of additional exostoses and periosteal proliferations.

The administration of thyroid extract and whole pituitary gland supplemented by general medical treatment resulted in no definite or constant relief of the symptoms. RICHARD S. RUTH, M.D.

Ballant, E. Actinomycosis of Bone (L. actinomycosis ossis). *Re. m. d. l. S. m. Rev.* 934, No. 5, 508.

The parasite causing actinomycosis in cattle was discovered by Rivolta in 1863. It was found in man by Israel in 1878. In cattle it usually affects the bones, but in man involvement of the bones is exceptional (9 of 400 cases reported in the literature). The lesion may arise by extension or metastasis. The author reports 3 cases of bone involvement.

The first case was that of a man of forty nine years who complained of generalized fatigue and pain which began several months after a prolonged cough and gradually increased. A few months later swelling developed in the feet and left calf. When the swellings were incised, pus was evacuated. The patient was finally sent to the hospital with multiple abscesses. Pus from abscesses under the scapula, in the throat over the thyroid, and in the axilla, left calf and chest, showed streptococci, staphylococci and the gram positive filaments of actinomycetes. The pex of the right lung showed an opacity and there was a persistent cough. The organisms found in the multiple abscesses were found also in the sputum. The patient died about nine months after the onset of the symptoms. Autopsy disclosed abscesses in the locations mentioned and also in the right lung and around the upper thoracic vertebrae. The first 3 thoracic vertebrae were softened and surrounded by pus, and there was a cavity connected by a sinus to the skin. Microscopic examination of these vertebrae showed actinomycetes in the center of the miliary abscesses. An excess of haemoiderin was found around these bone abscesses and also in the lesions on the feet.

The second case, which was an example of spreading by extension, was that of a man forty nine years of age who entered the hospital with a cough and rapidly increasing weakness and cachexia and died three months after the beginning of the symptoms. A clinical diagnosis of pulmonary tuberculosis was made but autopsy showed abscesses near the seventh and eighth thoracic vertebrae connecting with a large retropharyngeal abscess and an inter-

lobar abscess in the right lung, and almost complete destruction of the seventh lumbar vertebra with a pronounced kyphosis at the level of that vertebra. The granules and filaments of actinomycetes were found in all of the abscesses.

In the third case the bone involvement was metastatic. The patient was a man forty four years old who sustained a slight wound of the sole of the left foot while walking barefooted. The injury was followed first by an abscess at the site of the injury and at the ankle. Six weeks later abscesses developed in the right scapular and pectoral regions. When the abscesses were incised they yielded pus in which actinomycetes were found. A week later cough, riles, and dullness in the right lung developed. The roentgenogram showed a dense opacity in the upper half of the right lung, and gram-positive filaments were found in the sputum. Death occurred suddenly from pulmonary embolism about four months after the development of the initial lesion. Autopsy disclosed abscesses in the bodies of the eleventh and twelfth thoracic vertebrae, the left heel, the lungs, and abdominal viscera. All of the abscesses contained the granules and filaments of actinomycetes.

The portal of entry of the organisms is usually the digestive tract, less frequently the lungs, and rarely the skin. The author cites cases of extension from the sphenoid bone to the cranium from the throat to the ear from the appendix to the lumbar vertebrae and from the lung to the kidney and third lumbar vertebra. The vertebrae are the most frequent site of bone involvement, vertebral foci constituting 40 per cent of all skeletal lesions.

Metastases occur through the vascular system more often than through the lymphatics. According to Wertheimann a primary lesion in the lungs metastasizes most frequently to the liver, spleen, kidneys, brain, and skin, and a primary lesion in the intestines metastasizes most frequently to the myocardium, muscles, skeleton, and meninges in the order named.

The lesions often seen in the jaw have their origin in an osteomyelitis around devitalized teeth. They are usually not noticed until a swelling forms in the submaxillary or parotid region. In general, the lesions in the bone begin at the periphery. First the periosteum is destroyed and then the bone is gradually eroded. The infection reaches the medullary canal through the Haversian canals. As a rule the shape of the bone is preserved, but in the vertebral bodies the weakness sometimes causes kyphosis. If the disease becomes chronic, osteophytes may be formed, but as a rule there is a progressive destruction and death occurs before bone regeneration can take place. WILLIAM ARTHUR CLARK, M.D.

Carter, R. A.: Infectious Granulomata of Bones and Joints, with Special Reference to Crook's Granuloma. *Rad. Rep.* 1934, XXXI.

The author discusses crook's granuloma of bones and joints on the basis of seventy cases. He describes the findings in involvement of the knee

ment of the trabeculae of the spongiosa in a cranio-caudal direction and an apparent transverse breaking through of the trabeculae of the spongiosa parallel with the epiphyses. The epiphyses were irregular in both the femur and the tibia, appeared disarranged, contained isolated islands of bone and surrounded the diaphyses in the shape of a cup. The joint space was broader on the left than on the right and the articular cartilage was roughened. Isolated parts were broken off particularly in the condyles of the femur. In place of the tuberosity of the tibia a wedge of bone with a downward pointing spur was lodged in the epiphysis.

The picture suggested Schlatter's disease. The epiphyses of the ulna and radius were also changed. *Rachitis tarda* could be excluded because of the negative clinical findings and the refractory behavior of the process to all specific therapy. Because of the manifold forms of the phenomena the author rejects Valentin's diagnosis of "systemic disease." In addition to the chondrodystrophic phenomena there were findings suggestive of osteochondritis diaphyseos as well as Kleinbocks and Osgood Schlatter's disease. The thyroid gland was soft and enlarged.

In both cases similar changes in the skeletal system were found. The author agrees with Bracher, Wollenberger and others that these destructive changes are to be attributed to endocrine disturbances. He explains the histological changes by a hormonal property peculiar to the bone marrow which is controlled by the endocrine system. The embryologists (Velt) attribute the different changes to developmental hormones. From this standpoint the conception of the condition as a "systemic disease" may be justified. However it is not justified in the sense of the osteochondropathia multiplex as the bones are not involved, typical changes in the bones are absent and all the changes are found in the cartilage. The term *achondroplasia* indicates too little as the formation of cartilage is not lacking but the growth of cartilage is inhibited and there is a destruction of already existing tissue.

Among the osteoarthritic diseases the author distinguishes diseases due to vitamin deficiency and diseases due to endocrine factors. In the former the direction of the development of the osteoarthritic tissue is changed, whereas in the latter there are changes in the extent and degree of the development of the affected tissues. Diseases of the second group are often associated with those of the first. Since in addition to endocrine changes, there is avitaminosis, the picture of an otherwise incomprehensible systemic disease is explained. As several etiological factors are involved, Van Schrick proposes the term *chondromalacia*, leaving the cause out of consideration. By the use of this term with the addition of the name of the author the picture described by an author may be recognized. Van Schrick considers the term *dystrophia spongiosa epiphysearia* proposed by Ghilms for the combined forms of the disease as very appropriate.

A histologically distinct disease picture is shown by several photographs, roentgenograms and drawings. EXCERPT (Z)

Hackenbroch. Non-Operative Mobilization of Fibrous Ankylosed Joints (Unblutige Mobilisation fibros verstellter Gelenke). *Ztschr. f. orthop. Chir.*, 1934, 12, 308.

Contrary to the prevailing aversion to forcible measures for the mobilization of fibrous ankyloses the author recommends such measures for certain cases as he has found that they may be followed by surprisingly good results. The cases for which they may be considered are those in which efforts at gradual correction have failed or their failure is to be expected because of too firm locking of the joint or long duration of the ankylosis, and those in which the roentgenogram shows that the joint is entirely intact and free from osseous changes and a plastic operation would be too radical.

Difficulties are encountered in the determination of the indications, the method of operative procedure and the after treatment. Intervention is indicated in gonorrheal, septic, rheumatic and traumatic ankyloses of the types mentioned if the condition has been present for at least a year, the joint has become completely quiescent, the sedimentation reaction has become normal and the musculature is in good condition.

Preliminary treatment with massage and exercises is essential. The mobilization itself is done under general anesthesia with extreme gentleness and slowness. In the knee joint careful preliminary separation of the patella is necessary. After the mobilization a plaster cast is applied in a flexed position and an ice bag is applied over the joint. Movements are begun after about five days. The use of a special apparatus which allows simultaneous extension of the joint, massage, the application of hot air and the induction of Bier's hyperemia are also recommended. Bier's hyperemia often facilitates motion through its analgesic effect. As the reported cases show, the results are often astonishing.

(Z)

Plummer W. W., Sano, S., and Smith W. S. Hematogenous Tuberculosis of the Skeletal Muscles. Report of a Case with Involvement of the Gastrocnemius Muscle. *J. Bone & Joint Surg.* 1934, xvi, 631.

In the case of tuberculosis of the gastrocnemius muscle reported the nature of the lesion was proved by pathological and bacteriological studies and the patient was under observation for two years.

The authors state that in cases of solitary cold abscesses or isolated nodules surgical removal is indicated. The wounds heal by first intention, and both the functional and symptomatic results are good. For the fungoid form, numerous nodules, and excessive granulations following excision roentgen-ray irradiation has been recommended.

FLEURY J. BERNARD, M.D.

Lasserre M. C.: Focal Hypertrophic Osteopathies. The Diagnosis of Craniofacial Forms (Ostéopathies hypertrophiques en foyers. Diagnostic des formes crânio-faciales) *J de méd de Bordeaux* 1934, CII, 359

The enlargements of the flat bones in focal hypertrophic osteopathies may be due to either an extensive periostitis or a diffuse osteitis fibrosa. They usually begin in the frontal, parietal, and malar regions. The process goes on to sclerosis or even to eburnation of the bone and is usually fatal.

Tumors of the paranasal bones are most frequent in the African race. The lesions resemble a luetic osteitis more than osteitis fibrosa. It has been suggested that the cranial enlargements may be considered a localized hydrocephalus. The author cites a case of thickening of the cranium in the frontal region in which there was syndactylism of all of the extremities. There may be a diminution in the size of the cranium in all dimensions due to premature closure of the sutures. The sinuses may be absent. Hypertrophy of only one half of the skull may occur. In 1 such case death followed the symptoms of cerebral tumor.

Irregularity and thickening of the bones of the skull may be caused by the pressure of an intra-cranial tumor. These changes were found in 11 of 470 cases of brain tumor. The author suggests the name "hypercraniosis" for such skull deformities and states that a brain tumor should always be suspected in their presence.

Osteomata of the face occur most frequently in the orbit and sinuses. Osteomata of the orbit usually begin in a neighboring sinus. In its early stages, leontiasis ossea may be considered a single osteoma. Osteomata of the skull generally affect only the inner table. Sometimes there is an osteoplastic tendency. The author cites a case in which a large, hard bony tumor 18 cm long and projecting 14 cm developed on the skull of a man thirty-two years of age. At autopsy the neoplasm was found to have a hard wall and a soft center divided by bony trabeculae. In the case of a child three years of age there was a more diffuse proliferation. In both of these cases the tumor was diagnosed as an osteosarcoma.

A similar tumor may be produced by syphilitic osteitis. Such a neoplasm may have either a rarefying or a condensing effect, but in the skull the latter is more common. The inner table of the skull has been said to be a frequent site of bone syphilis. The symptoms of the lesion described may be of a nervous nature, such as epileptic crises, hemiparesis, or motor paralysis of the eye.

Osteofibroma may cause thickening of the alveolar processes of either jaw and a lowering of the palatine vault. It causes no destruction of bone. Chondroma, which appears in the roentgenogram as a block of cartilage, may occur on the alveolar borders of the maxilla. Osteoma may be central or peripheral, and involve the mandible, the nasal bones, or the sinuses. Giant-cell tumors may be locally malignant, but do not metastasize. Endothelioma may involve the

paradental regions in either a solid or a cystic form.
WILLIAM ARTHUR CLARK, M D

Talbot, A.: Acute Osteomyelitis of the Entire Shaft of the Radius with Rapid Total Necrosis of the Bone; Sequestrectomy; Early Secondary Resection in Two Stages; Osseous Regeneration (Paralysite aiguë du radius à ec nécrose totale rapide de l'os. Séquestrectomie; résection secondaire précoce en deux temps; régénération osseuse) *Rev d'orthop* 1934, XI, 315

Two days after infection of the thumb of a man twenty-two years of age there developed behind the elbow an abscess from which free pus containing a pure culture of staphylococci was evacuated. A week later an abscess near the styloid of the radius was opened. No connection between this abscess and the bone was seen, but the temperature was still high, occasionally reaching 40 degrees C and involvement of the bone was suspected. Incision over the posterior aspect of the radial shaft revealed an extensive osteomyelitis with pus under the periosteum. The entire shaft eventually became a sequestrum. The distal half of the sequestrum was removed about six weeks after the acute stage and the proximal half three weeks later. A plaster cast was applied to maintain the elbow in 90 degrees of flexion and the forearm in neutral rotation. Three months later the radial shaft showed good regeneration on roentgen examination, but was irregular in form and about 3 cm shorter than normal, causing a moderate radial deviation of the hand. Flexion of the elbow was almost normal, but extension was limited to 140 degrees. Wrist flexion was good, but no hyperextension was possible.

In discussing the question as to whether complete resection of the radial shaft should be done in such a case the author says that there is always the danger that the bone will not regenerate and that if it does regenerate the shaft may be so misshapened that it will interfere with rotation of the forearm. The time at which such a complete resection is performed is an important factor. If the resection is done too early—less than two weeks after the acute infection—there is danger of removing viable bone with the dead bone, and if it is done too late—after three or four months—the new bone will be so abundant that it will interfere with resection of the sequestrum. In the case reported sequestrectomy was performed after about two months, which seemed to be the best time at least in this case. The necessity for immobilization of the wrist is associated with the danger of ankylosis of the wrist and elbow.

WILLIAM ARTHUR CLARK, M D

Bravo y Díez Cañedo: Traumatic Malacia of the Navicular Bone of the Wrist (Malacia de origen traumático del escafoides del carpo) *Actas Soc de ciruj de Madrid* 1933 III, 7

When aseptic necrosis of a bone appears and increases without apparent cause, a condition of local rickets or osteomalacia is suspected. Local

weakness and deformity may be caused by injury in the wrist local osteomalacia involves principally the lunate and navicular bones. Involvement of the navicular bone is called 'Kochler's disease' or Mouchet's disease, and involvement of the lunate bone, Klenbock's disease.

Involvement of the navicular bone alone is very rare. The author reports three cases. Conservative treatment consisting of immobilization the induction of local hyperthermia, continuous extension, and protein therapy was unsuccessful. Multiple perforations were then made in the involved bone and the cystic portion was extirpated. Following this treatment regeneration of the bone was observed in roentgenograms. WILLIAM R. MEYER M.D.

Pieri G. The Surgical Treatment of Congenital Muscular Torticollis (Sulla cura operatoria del torcicollo muscolare congenito) *Arch. di chir. infanzia*, 1934, 1, 231

Pieri reports ten cases of congenital muscular torticollis which were treated surgically. The ages of the patients ranged from four to twenty three years. Follow up examination—in one case ten years after the operation—showed the results to be excellent.

The method employed was chiefly that of Foedert with a few minor modifications. This procedure differs from others chiefly in the surgical approach, which is made on the inferior instead of the superior portion of the muscle. The author summarizes its advantages as follows:

1. The scar is less conspicuous in the inferior portion of the neck.
2. The low incision renders the operation less difficult technically.
3. The functional results are better than those of other procedures. GEORGE C. FINOLA, M.D.

Lagrot, F., and Cohen-Solal, L.: Painful Forms of Lumbosacral Spina Bifida Occulta and Their Treatment (Les formes douloureuses du spina bifida occulta lumbosacré et leur traitement) *Rev. d'orthop.* 1934 21, 194.

In the numerous affections designated as sciatica, especially those presumably of rheumatic origin roentgen study frequently reveals an organic vertebral origin. Lumbosacral spina bifida occulta is not a rare cause, but is often unrecognized.

The painful manifestations of this vertebral malformation are many and varied. Eventually the pain localizes and radiates to the lower extremities and the vertebral column.

The authors describe four types of painful manifestations of lumbosacral spina bifida occulta (1) pain irradiating more or less to the lumbar regions, (2) a type of pseudo-Pott's disease, (3) a type of vertebral insufficiency and (4) the pseudo-nephritic type.

The first type is rather frequent. The pain may remain local and eventually become accompanied by fatigue or may radiate to the thigh. When it

radiates to the thigh it may stimulate sciatic neuralgia but is not accompanied by radicular signs. There may be anesthesia in the region of the rectum and scrotum, and the plantar and Achilles reflexes may be absent. In some cases spasticity of the leg muscles may be present.

The type of pseudo-Pott's disease is characterized by a localized spinal pain, contracture of the vertebral muscles, and the appearance of a deviation. Occasionally the reflexes are exaggerated and an ankle clonus is present. In contrast to Pott's disease, bed rest is not followed by amelioration of the symptoms.

The type of vertebral insufficiency is characterized by indefinite, vague, and variable vertebral pain. There appears a type of postural weakness which requires frequent changes of position for comfort.

The pseudo-nephritic type is characterized by pain suggesting nephritic colic, but even between the attacks there is a constant localized tenderness in the region of the lower spinal column. As a rule the urine is negative. Roentgen study of the lumbosacral region reveals the nature of the disease.

Irrespective of the affection simulated, pressure at the level of the spina bifida is always followed by an acute, sharp pain. When the condition persists for a considerable length of time urinary incontinence and a lumbar tumor may develop. The ultimate simulated clinical syndrome is somewhat abnormal there being, for example, crural neuralgia associated with sciatica or cutaneous hyperesthesia associated with atrophy of the painful extremity. The condition remains refractory to treatment.

The correct diagnosis is made on the basis of the facts mentioned and the findings of roentgen study. Injected lipiodol is not necessarily arrested at the level of the spina bifida.

The usual treatment consists of the administration of salicylates, irradiation, immobilization, and the use of orthopedic appliances. In very severe cases in which these measures are ineffective laminectomy gives excellent results as a rule.

AARON S. SCHWARTZMAN M.D.

Schapiira C.: A Clinical and Roentgenological Contribution to the Study of Localized Affections of the Intervertebral Disks (Contributo clinico e radiologico allo studio delle affezioni localizzate del disco intervertebrale) *Chir. e organi di movimento* 1933 xviii 545.

Following a review of the more important studies of the intervertebral disks, Schapiira reports three cases of lesions of these disks.

The first case was one of calcification of the nucleus pulposus of the tenth thoracic intervertebral disk of a patient who had numerous visceral lesions of tuberculosis. The disk lesion caused pain and stiffness of the back. In the course of eighteen months partial resorption of the calcification occurred, but there was a coincident marked narrowing of the intervertebral space which indicated extension of the disease process.

The second case was one of calcification of the disk between the eleventh and twelfth thoracic vertebrae of a patient who had been cured of Pott's disease. The calcification did not correspond exactly to the nucleus pulposus, but this might well have been due to the fact that the spine was markedly curved the nucleus pulposus being therefore displaced toward the region of less compression.

The third case was of interest because it was a case of calcification of an intervertebral disk in a child of fourteen years. In a review of the literature the author was able to find only one case of this condition in a child—that of a child of twelve years reported by Baron. Rathke found no case in which it occurred before the age of twenty-nine years. The case reported by Schapira is of interest also because of the location of the calcification between the third and fourth thoracic vertebrae as no case of calcification above the fifth disk has been reported to date.

In his studies Schapira was impressed by the frequency with which calcification of a nucleus pulposus is associated with tuberculosis even though the first symptoms may date from a trauma.

In conclusion he reports a case presenting the syndrome of primary localized degeneration of an intervertebral disk recently described by Putti. This condition occurs between the thirtieth and fortieth years of age. It is associated with a localized scoliosis which often can be demonstrated only roentgenographically. It is cured by immobilization and active hyperthermia. *ROBERT T. LEMAY, M.D.*

Mancini, G: The Evolution of Mediastinal Abscesses in Pott's Disease under Climatotherapy (E' evoluzione degli ascessi mediastinici da morbo di Pott col trattamento climatoterapico). *Chir. d'org. di nov. merito* 933 VIII, 357.

Mancini discusses the course of prevertebral and paravertebral abscesses occurring in cases of tuberculous of the thoracic spine. Of 283 cases of tuberculous spondylitis which were observed during a period of nine years at the Codivilla Heliotherapy Institute, lesions were present in the thoracic spine in 96 and of the latter group an accessory mediastinal shadow was demonstrated in 78 (81.25 per cent). The most common shadows were roughly globular and occurred in the middle section of the thoracic spine. Next most common was a heart-shaped or shield-shaped shadow at the upper end of the spine. At the lower end the shadow was usually roughly globular. Least common was a bilocular or hour-glass-shaped shadow. These shadows corresponded quite definitely to the location of the diseased vertebrae and were largest opposite the vertebra most involved.

In 24 (30.7 per cent) of the cases with an accessory mediastinal shadow the abscess was completely absorbed or only a calcified residuum remained when the patient was dismissed. In 35 (44.8) per cent, the mediastinal abscess shadow was markedly smaller and in 19 the shadow was unchanged. Six of the patients died during treatment.

Mancini reports the clinical histories of 9 typical cases, describing the mediastinal condition before and after treatment. Completion of the treatment required from six months to two years.

In many of the cases of thoracic spondylitis spinal irritation was manifested by changes in the reflexes. In 15 there was definite evidence of more or less cord pressure. In all, there was a definite mediastinal abscess. Eleven (73.3 per cent) of the patients with spondylitis were dismissed with the paraplegia cured or greatly improved, 2 (13.3 per cent) showed no change, and 2 died. Several of the patients with paraplegia had other severe conditions: 1 had cardiac disease, 1 diabetes, 4 pulmonary lesions and 1 a localized lumbar spondylitis. Two of the patients with paraplegia were in the first decade of life, 5 were in the second, 3 were in the third, 5 were in the fourth and 1 was in the fifth. In the majority of the cases the disease involved 3 or more vertebrae. The incidence of cure in the cases of paraplegia (73.3 per cent) was higher than the incidence of cure in the cases of spondylitis (30.7 per cent) because the patients with paraplegia, realizing the gravity of their condition, completed the treatment whereas those with spondylitis left the Institute before they were cured.

Even though climatoheliotherapy was the treatment of choice in these cases, other established methods such as immunizing treatment and the administration of calcium and iodides were employed in addition. Albee's operation was performed only in cases in which the lesion did not heal or the pain persisted after the usual treatment. It was not performed in the cases of paraplegia.

Mancini attributes the good results to the combined effects of climate, sunlight and immobilization. *ROBERT T. LEMAY, M.D.*

Iesu, G: The Frequency of Acute Osteomyelitis of the Pubis (Sulla frequenza dell'osteomielite acuta del pube). *Chir. d'org. di nov. merito*, 1934 XIV, 1.

The author reports three cases of acute osteomyelitis of the pubis. The patients were six, twenty and fifty years of age. All of them recovered.

Acute osteomyelitis of the pubis does not differ in its pathological anatomy, etiology, or symptoms from acute osteomyelitis of any other bone. The infrequency of involvement of the pubis may be due to the fact that this bone contains a relatively small amount of spongiosa. Iesu reviews the statistics on the occurrence of osteomyelitis in unusual sites and the records of twenty-five cases of acute osteomyelitis of the pubis which he collected from the literature.

In its development, the pubis constitutes one of the two centers of primary ossification of the iliac bone. It fuses with the ischium between the tenth and twelfth years of age and with the ilium between the fifteenth and sixteenth years. Therefore osteomyelitis appearing before puberty occurs in this primary center. After puberty two complementary

centers of ossification appear for the spine and the angle of the pubis. These fuse with the main portion of the bone during the eighteenth and twenty-second years of age respectively. Accordingly these centers may be involved only in infections occurring after puberty.

The abscess formed as the result of the disease may point toward the skin, toward the true pelvis, or in females in the vagina. The treatment indicated is the same as that for osteomyelitis elsewhere.

A. Louis Rost, M.D.

Jentzer A. Osteomyelitis of the Pubis, Chronic from the Start, Stirred up by Symphyseotomy (Osteomyélite chronique d'emblée du pubis déclanchée par une symphysectomie) *Rev d'orthop* 1934, xli, 189.

Chronic osteomyelitis of the pubis is more uncommon than the acute form. In a review of the literature Jentzen was able to find only fifteen cases of chronic osteomyelitis following acute osteomyelitis and only one case similar to the case he reports in this article in which the osteomyelitis was chronic from the beginning.

Jentzen's patient, a woman twenty-nine years old who had never been seriously ill, was subjected to symphyseotomy during a difficult delivery. About two weeks later she complained of pain in the pelvis and there was a discharge from the wound over the symphysis. When she began to walk she experienced agonizing pain in the region of the pubis and her gait resembled that caused by bilateral congenital dislocation of the hip. Her condition gradually became worse and in spite of irrigation of the suprasymphysal wound with Dakin's solution, the odor from the wound became very offensive. About five months after delivery when she was first seen by Jentzen roentgen examination of the pubis showed a separation of about 20 mm. destruction of bone, rough edges, and small sequestra.

After the patient's general condition had been improved curettage of the bone was done. The pubis showed a separation of 25 mm. and the two sides could be moved independently. Dressing with mercurochrome was done and ultraviolet rays were applied. A month later the odor had ceased and the general health was much improved. X-ray examination of the pubis then showed a separation of about 30 mm. but the bone edges were clean. Four months after the curettage the wound was healed. The pubic bones seemed to be held together and roentgen examination showed the distance between them to be almost normal. When the patient was re-examined five years later she was found to be completely cured.

From this case and the cases collected from the literature the author draws the following conclusions:

1. Non tuberculous chronic osteomyelitis of the pubis is rare.
2. There may be a latent infection.
3. The first symptoms may be referred to the bladder.

4. In the differential diagnosis cystoscopy should be done.

5. Urinary calculi may be present and may not disappear until the osteomyelitis is cured.

6. The treatment indicated is curettage by an extraperitoneal approach, application of the ultra-violet ray and measures to improve the general condition.

WILLIAM ARTHUR CLARK, M.D.

Maselli, V. Juvenile Deforming Osteochondritis and Osteo-Arthritis of the Hip (Dell'osteochondrite e osteoartrite giovanile deformante dell'anca) *Chir d'organi di movimento* 1934, xix, 13.

The author reports ten cases of juvenile deforming osteochondritis and osteo-arthritis of the hip, a condition originally described by Perthes as osteochondritis. The pathological process in the hip joint can now be differentiated from the tuberculous arthritis with which it was formerly confused. At first the process is an osteochondritis of the epiphysis of the head, but later it involves the neck of the femur and the acetabulum. The involvement of all of these structures may explain the development of valgus or varus deformities of the epiphysis. The osteo-arthritis is believed to occur secondarily or to become superimposed upon the osteochondritis, especially if the latter involves the acetabulum.

In cases of unilateral lesions studied roentgenologically the author noted an absorption of bands of calcium and a partial aplasia of the bony structure of the nuclei in the unaffected leg. These conditions, whether congenital or acquired, may predispose to the development of osteochondritis.

The possible causes are trauma, infection, toxemia, local vascular disturbances, and endocrine dysfunction.

PETER A. ROST, M.D.

Danforth M. S. The Treatment of Legg-Calvé-Perthes Disease Without Weight Bearing. *J Bone & Joint Surg* 1934, xvi, 516.

The author urges the prevention of weight bearing in Legg-Calvé-Perthes disease until the bone structure becomes normal.

He became interested in the treatment of this condition as the result of the study of young patients in whose cases a diagnosis of tuberculosis of the hip was made during the period from 1909 to 1913. These patients were treated by traction in bed, traction in hip splints, or traction with plaster-of-Paris spicas. No weight bearing was allowed. In a number of them the final result was an apparently healed hip joint with motion through a nearly normal range. Restudy of those who recovered with movable hips led to the conclusion that they had been suffering from the changes in the epiphysis of the femur which are now classified as Legg-Calvé-Perthes disease.

To three of his older cases, in two of which treatment with prevention of weight bearing was carried out and in one of which weight bearing could not be prevented because of lack of coöperation on the part of the patient, the author adds three recent cases in

which freedom from weight-bearing was instituted for periods of from three and a half to four years without the use of traction or apparatus. In the older cases which were under observation for as long as ten years a traction splint or cast was used. Except in the case in which weight-bearing could not be prevented, nearly perfect restoration of the femoral head resulted. In the one exception there was deformity of the head with loss of normal motion and shortening of the leg. It was evident that the clinical picture and symptoms coincided to a marked degree with the roentgen findings. The two patients who followed the prescribed treatment ten years ago have remained well and their roentgenograms show a normal contour of the femoral head. The author emphasizes that when proper treatment is not given the sequelae may include, in addition to deformity of the head of the femur the development of a painful osteo-arthritis of the hip at the age of forty or fifty years. ROBERT C LOWENSTEIN, M D

SURGERY OF THE BONES, JOINTS MUSCLES, TENDONS ETC.

Orell, S.: Studies on Bone Implantation and New Formation of Bone. The Implantation of Pure Bone and the Transplantation of New Bone (Studien ueber Knochenimplantation und Knochenbildung, Implantation von "Os Purum" sowie Transplantation von Os Novum.) *Acta chirurg. Scand.* 1934 1 vi Supp. vvi

The author's clinical cases show that boiled, autoplasmic bone can be implanted into epiphyses and diaphyses in osteoplastic wedge osteotomies with good clinical and roentgenological results. It heals in and undergoes metaplasia. They have demonstrated also that previously treated bone material—pure bone (bone with the fat, connective tissue, and albumin removed)—will heal in and undergo metaplasia with good clinical, roentgenological, and anatomical results when it is used in osteoplasties, for the filling in of bone defects after bone and joint resections, and in osteosyntheses. Bone in the process of new formation—new bone—can be used with good results in the Albee operation and operations for pseudarthroses.

The new formation of bone occurring after implantation of a graft, in clinical cases progresses in the same way as the new formation of bone after the implantation of small pieces of partly periosteal and partly endosteal bone. The periosteal new formation of bone is manifested roentgenologically and anatomically by deposits of new bone. The endosteal new formation of bone is manifested at first by increased density of the implanted bone and diminished definition of its structure and later by the appearance of new bone structures.

The periosteal new formation of bone proceeds at first relatively rapidly, abundantly, and extensively, but later shows a tendency toward contraction and deformity while the new bone tissue is still soft. The endosteal new formation of bone proceeds more

slowly with breaking down of the implant if boiled, autoplasmic, or previously treated bone is used and is not subjected to too powerful mechanical demands. In general the implant seems to retain its form until the new bone has attained sufficient firmness by calcification. The new formation of bone is limited to the epiphysis. It proceeds in the cleft between the firm bone and the implant and in the wide cleft spaces of the spongiosa of the implant and tends to expand over their borders.

In the formation and development of the new formation of bone the local conditions of nutrition and circulation are of great importance.

To maintain definite form of the skeletal part when bone implants are used in an osteoplastic operation, the implant must fill up the defect in the bone and the attempt must be made to obtain endosteal new formation of bone. When the primary desire is to further the periosteal new formation of bone, the implant should be given such a form that it fixes the bone ends to each other but otherwise its impingement on the subperiosteal space is minimal.

Hard bone substance in the form of boiled autoplasmic bone or pure bone can be implanted either alone or to obtain complete metaplasia of the implant, with living bone connective tissue.

In the author's cases the subperiosteal implantation of autoplasmic or pure bone in the diaphysis or epiphysis after resection was followed by good metaplasia.

When pure bone was implanted into the diaphysis where the periosteum and the greater part of the diaphysis had been destroyed, had undergone sequestration, or had been resected, the bone was completely resorbed without new formation of bone, whereas when it was implanted parallel with and close to, fresh autoplasmic bone a good result was obtained.

After the Albee operation implanted grafts of pure bone become fused into the spinous processes and resorbed, doubtless partly because the spinous processes, which consist of spongy substance, have a slight tendency toward expansive bone formation and partly because there is no obstruction to the ingrowth of the extrasketal connective tissue. The mechanical demands to which the graft is subjected because of its position in the spinous processes appears in itself unable to stimulate bone formation by the cells of the extrasketal connective tissue. In osseous connective tissue the property of bone formation has reached such development ontogenetically and phylogenetically that it is rapidly activated by stimulation, whereas in extrasketal tissue the cells must first acquire this function and undergo metaplasia through long-continued stimulation.

The bone graft used in the Albee operation must be either freshly autoplasmic (diaphysis) or must consist of bone in the process of new formation obtained by temporary subperiosteal implantation of pure bone into another bone such as the tibia. In

the course of from one to three months the pure bone temporarily implanted into the tibia is surrounded abundantly by new bone which, after excision and transplantation into the spinous processes, unites the spongiosa of the spinous processes proliferates, and forms bone tissue. After the temporary subperiosteal implantation into the tibia examination shows no changes in the latter apparently only a soft tissue scar remains.

Poorly healing pseudarthroses seem to be treated effectively by the transplantation of new bone. After the transplanted bone has healed in and has become calcified, the bony connection has become firm and the pseudarthrosis has been put absolutely at rest; the pseudarthrotic tissue is gradually changed into bone tissue.

New bone appears to accommodate itself to its surroundings easily. Its cells derive nutrition readily and have a power of growth greater than that of the cells of the developed mature bone tissue and of pseudarthrotic tissue.

The hard bone substance of the bone implant forms a firm support for the osseous connective tissue so that the latter after it has received nutrition, may proliferate at rest and form new bone without displacement of its tissue mass.

The periosteum plays an important part as a limiting membrane between the skeletal and extrasketal connective tissue and probably assures normal conditions of nutrition for the osseous connective tissue and the new formation of bone.

Both boiled and previously treated bone implants seem to be well tolerated by the tissues of the host.

If the development of the bony implant in the tissues is followed roentgenologically for a long time there will be found in the bone, after metaplasia of the implant has been practically completed, a long persisting cicatricial tissue characterized by a peculiar structure entirely different from that of the adjacent normal bone.

LOUIS NEWKELT M D

FRACTURES AND DISLOCATIONS

Iley Groves, E. W.: The Use of Fascial and Tendon Grafts in Certain Fractures and Dislocations. *Ann Surg* 1934, 9, 20.

In recurrent dislocations of the jaw the author uses the tendon of either the palmaris longus or the brachioradialis, passes it around the neck of the jaw and through a hole drilled in the mastoid process from behind inward and forward, pulls it tight and sutures the two ends. His incision, which is about 1½ in. long, is made horizontally below the ear.

To correct recurrent dislocation of the shoulder he passes a strip of fascia lata 1 in. wide under the capsule of the joint and over the acromion to form a new sling ligament. Three small incisions are made—one just below the coracoid, one behind the posterior border of the deltoid and one above the acromion process. These are joined by three tunnels made by blunt dissection which pass between the two heads of the biceps, through the quadrilateral

space, and under the deltoid. The fascia is passed through, overlapped above the acromion and sutured.

In late cases of unreduced dislocation of the radial head, the author passes a tendon graft around the neck of the radius and through a hole at the base of the olecranon process of the ulna. He believes that this should be done only after the full length of the ulna has been restored by some method of osteosynthesis. After the operation he immobilizes the arm in plaster for six weeks.

In his cases of dislocation of the ulnar head the tendon of the palmaris tendon is passed around the ulna and through a drill hole in the radius near the median border.

The crucial ligaments of the knee joint are repaired through a J-shaped incision by means of a strip of fascia lata with its lower attachment intact which is passed through drill holes in the outer condyle of the femur and the inner tuberosity of the tibia. The fascia is pulled as tight as possible and fastened to the tibia with an ivory nail. The free end of the strip being then fastened to the inner condyle of the femur.

Fractures of the patella are repaired by an encircling strip from the iliotibial band.

The procedures are described in detail and shown by diagrams.

BARBARA B STIMSON M D

Moffat, B. W.: Pathological Fractures of the Spine Associated with Disorders of Calcium Metabolism. *Arch Surg* 1934, xxviii, 1095.

In the author's opinion pathological fractures of the spine due to loss of calcium are not uncommon. The loss of calcium may be the result of insufficient absorption due to a lack of calcium in the diet, a local intestinal condition, or abnormal excretion caused for the most part by glandular disturbances. Moffat believes that in the greater proportion of cases the cause lies in the intake of calcium. He describes a definite clinical picture characterized by gradually increasing fatigue referred to the spine and, after a sudden strain a sudden sharp localized pain with pain radiating along the spinal roots and tenderness over the spinous processes throughout the affected portions of the spine. Age is apparently not a factor.

Roentgenographic observations are characteristic. The earliest sign of the fracture is a pronounced biconcave shape of the intervertebral disk. The presence or absence of condensation of bone at the upper and lower margins of the vertebral body suggests slow or rapid progression of the condition. Compression fractures are not accompanied by extravasation of the contents of the disk.

The treatment depends upon the determination and correction of the underlying cause. A brace rather than a plaster cast should be used for support and the patient kept out of bed to prevent further loss of calcium from disuse.

Four cases are reported.

BARBARA B STIMSON M D

Neller, C.: Isolated Fracture of the Femoral Condyle and Its Operative Treatment (*Die isolierte Fraktur des Femurcondylus und ihre operative Behandlung*) *Chirurg* 1933, v 8:71

Most fractures of the knee region occur in the articular end of the tibia. The horizontal table of the tibial condyles forms the natural abutment for the weight bearing of the femoral condyles. If the tibial head remains intact, the thrust falls against the femoral condyles. The latter crack, so that the fracture line usually starts in the middle. If the break continues into both condyles, a T or Y fracture results, and if the force has an oblique direction an isolated condyle fracture is produced. Of the single condyle fractures, the great majority occur in the outer condyle. On the whole, these fractures are unusual.

In many cases only a crack occurs, the insertion of the capsule of the joint, the compressing action of the muscle and tendon sheaths, and the strongly developed ligamentous structures preventing displacement. The treatment of these cases presents no difficulty. It is necessary only to prevent subsequent displacement of the fragments by suitable fixation. Continuation of the force results in typical displacements, a knowledge of which is important in the treatment. First, there is a lateral breaking away of the condyle with the formation of a wedge-shaped cleft which gaps most widely at the level of the joint surface and becomes smaller proximally. Next the fragment is forced upward so that a step-up irregularity results in the joint. As the fracture always begins in the middle, this step-formation comprises not less than half of the joint surface. The displacement must be corrected for if

it remains the knee will be unstable. Finally a rotation of the fragments occurs around an axis through the condyles. This displacement must also be taken into consideration as otherwise satisfactory restoration of the joint surface is impossible.

The clinical diagnosis of the fracture is easy. Careful X-ray examination is absolutely necessary to demonstrate displacement and to determine whether non-operative treatment will suffice. If a condylar fracture with displacement is present, accurate reduction and retention will be difficult. With the various extension methods it is usually possible to obtain considerable improvement in position but not the millimeter accurate reduction which is essential for normal stability and movement of the knee joint.

That operative treatment may be necessary for fractures of the condyles is generally admitted. However most surgeons apparently regard operation as an unavoidable evil and prefer a small displacement to the risk of surgery. Accordingly reports on operative technique and the results of operation are very scarce. The author is of the opinion that today we must extend the indications for operation and formulate them more concisely. He demands restoration of the normal joint structure. If this cannot be done with millimeter accuracy by conservative measures, operation is justified. Following a detailed description of his operative method and reposition maneuver—a longitudinal incision and fixation by two wood screws—Neller reports a case in which this method was used. Re-examination eleven months after the accident showed flexion of 90 degrees and limitation of extension of 5 degrees. ZILLMER (Z)

SYMPTOM OF THE DISEASE AND ITS TREATMENT

SYMPTOM

The patient whose case is reported reached for a telephone and shortly afterwards noticed swelling and numbness of his left hand and later of the entire left arm. At the same time voluntary movement became impossible. Examination by the author twenty-four hours later disclosed cyanosis, contraction of the fingers and elbow sensibility changes, limitation of movement at the shoulder joint, slight fever, and a palpable tender cord extending along the inner surface of the arm from the elbow to the

axilla. The patient was taken to the hospital and the following day the swelling had increased and the arm was more tender. The patient was taken to the hospital and the following day the swelling had increased and the arm was more tender. The patient was taken to the hospital and the following day the swelling had increased and the arm was more tender.

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Edward P. Thrombophlebitis of the Upper Extremity Caused by Exercise. Removal of the Thrombosed Segment of the Vein. Arterial Embolectomy Cure. Thrombophlebitis can be a serious complication of the upper extremity. The patient whose case is reported reached for a telephone and shortly afterwards noticed swelling and numbness of his left hand and later of the entire left arm. At the same time voluntary movement became impossible. Examination by the author twenty-four hours later disclosed cyanosis, contraction of the fingers and elbow sensibility changes, limitation of movement at the shoulder joint, slight fever, and a palpable tender cord extending along the inner surface of the arm from the elbow to the

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Case No. 1. Thrombophlebitis of the Upper Extremity Caused by Exercise. Removal of the Thrombosed Segment of the Vein. Arterial Embolectomy Cure. Thrombophlebitis can be a serious complication of the upper extremity. The patient whose case is reported reached for a telephone and shortly afterwards noticed swelling and numbness of his left hand and later of the entire left arm. At the same time voluntary movement became impossible. Examination by the author twenty-four hours later disclosed cyanosis, contraction of the fingers and elbow sensibility changes, limitation of movement at the shoulder joint, slight fever, and a palpable tender cord extending along the inner surface of the arm from the elbow to the

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In from 30 to 100 per cent of cases of aneurism the cause is syphilis.

The mycotic aneurism is a true aneurism developing in the course of bacterial endocarditis and some of the bacteremic diseases. It is usually first discovered at autopsy. It occurs most frequently in visceral arteries and seldom in the large trunks or branches of the aorta. Its most common sites are the cerebral vessels, the superior mesenteric artery and peripheral arteries. Mycotic aneurism is a disease of youth, its incidence being highest before the age of thirty years.

Statistics indicate that aneurism of the common iliac artery is rare. In the case reported by the author the aneurism was especially unusual because it was the size of a small grapefruit whereas, as a rule, such aneurisms range in size from that of a pea to that of an orange.

In describing the formation of mycotic aneurisms the author states that at the site of an embolus there occurs an endarteritis which results in an ulcer. The infection spreads to the media, producing a mesenteritis. The elastic wall is destroyed, and if the infection does not result in rapid perforation of the vessel wall with rupture, the weakened wall gradually bulges with the formation of a true aneurism. Therefore a low grade of virulency is a prerequisite for aneurism of the mycotic type.

Mycotic aneurisms are prone to rupture, especially when they are located in a cavity of the body where they get no support from surrounding tissue. Death results from bleeding into the thorax or abdomen or sudden increase of intracranial pressure.

Mycotic aneurism is usually latent. Therefore a clinical diagnosis is seldom made. As a rule there is a history of endocarditis and evidences of that condition are found. The patient may have had a recent embolism and thrombosis. The development of an aneurism in the peripheral arteries can be watched. In involvement of the brachial and femoral arteries it is easy to make a diagnosis in the presence of a pulsating expansile tumor connected with, and in the line of the artery together with positive findings of other well-known tests.

If the aneurism develops in one of the large cavities of the body it is often first discovered at autopsy. Fluoroscopic examination is indispensable in the diagnosis of these aneurisms because their expansile pulsation differentiates them from other tumors.

The medical treatment of aneurisms, introduced by Valsalva and Albertini in 1738 has been almost entirely unsuccessful.

The first ligation in the treatment of aneurism was done by Hunter in 1753. The greatest single advance in the surgical treatment of aneurisms since the time of Hunter was made by Matas who, in 1905 reported his radical cure by endoaneurismorrhaphy. The use of aluminum bands for ligation according to the method of Halsted and Matas has great advantages as there is no destruction of the intima and the band can be removed to re-establish circulation in the event of impending disaster to the distal tissues.

Two methods of importance are Anel's ligation, the application of a ligature to the main artery just proximal to the aneurismal sac, a method used most frequently in aneurism of the vessels of the abdominal cavity and Brador's ligation, the application of a ligature to the main artery distal to the aneurismal sac, a method used for aneurisms of the innominate, subclavian, and common carotid arteries.

The successful outcome of any surgical procedure on an aneurism depends entirely on the presence of an adequate collateral circulation. The danger to life is probable greatest in aneurisms of the common and external iliac arteries, and the danger from gangrene greatest in aneurisms of the common femoral artery.

The statistics on ligation of the common iliac artery show a high incidence of gangrene due to inadequate circulation. Therefore in the case of aneurism of the common iliac artery reported by the author it was necessary to establish an adequate collateral circulation before ligation was undertaken. As the Matas compressor could not be used in this area to improve the collateral circulation, Gage decided to interrupt some of the vasoconstrictor fibers of the sympathetic nervous system supplying the vessels of the lower extremity on the side of the aneurism. Alcoholic injection of the lumbar sympathetic ganglion was selected as the procedure of choice because of the excellent results obtained with it by Flothow and Reibert.

The lumbar sympathetic ganglia on the right side were first blocked with novocain, a procedure which resulted in an increase in the surface temperature above that of the opposite side. Five cubic centimeters of 95 per cent alcohol were then injected at the level of the first, second, third, and fourth lumbar sympathetic ganglia on the right side. The right foot, leg, and thigh remained from 7 to 8 degrees F warmer than the left. On the third day following the injection of alcohol the aneurism was reduced to two-thirds its former size, but on the fifth day it increased to about one-half its former size. The increase in size was explained by the moderate return of tone to the vessels following sympathectomy which was demonstrated by Rose. Seven days after the alcoholic block a transperitoneal operation was performed for ligation of the right common iliac artery on the proximal side of the aneurism (Anel's operation). Following the ligation there was complete cessation of pulsation in all of the vessels distal to the aneurism. However the foot still retained a good pink color and the high elevation of the temperature persisted. Five days after the operation a slight pulsation returned in the common femoral artery although there was no pulsation in the aneurismal sac. The aneurismal sac was a large solid mass. One month after the operation the foot had a pink color and the right foot was warmer than the left. The patient made a complete recovery.

This case shows the value of blocking the sympathetic ganglia as a preliminary to the treatment of aneurisms of the peripheral arteries. It demonstrates

also the feasibility of ligating the common iliac artery near its origin from the aorta in cases of mycotic aneurism of the common iliac artery which involves the internal and external iliac arteries and is associated with a healed endocarditis.

The article contains numerous illustrations and has an extensive bibliography

J EDWIN KIRKPATRICK M D

Curtis, A. C., and Coffey R M: Periarthritis Nodosa. A Brief Review of the Literature and a Report of One Case. *Ann Int. Med.* 1934, vii, 1345

The authors report a case of periarthritis nodosa with some atypical clinical and pathological manifestations which occurred in a man forty seven years of age. The course of the condition was protracted and comparatively afebrile. The outstanding signs and symptoms were generalized progressive muscular atrophy, weakness, pain, and edema of the hands and feet. There was no clinical evidence of nodular swellings or aneurismal dilatations. The condition was confined to the smaller arteries and arterioles. The diagnosis was made by biopsy before death. The immediate cause of death was bronchopneumonia.

Two cases of apparent recovery after treatment with arphenamin have been reported in the literature, but in the authors case six injections of neoarphenamin caused no evidence of improvement. An eosinophilia of 77 per cent was an uncommon finding.

The authors believe that the presence of vegetative endocarditis at the margins of the mitral valve may support the theory that the condition is of rheumatic origin or that the vegetations may have been due to a Libman Sacks type of verrucous endocarditis.

ELIZABETH M CRANKTON

Neale, A. V. and Whitfield, A. G W: Rheumatism and Its Relation to Arterial Disease and Periarthritis Nodosa. *Brit M J.*, 1934 II 104

Since Aschoff's description of the nodes in the ventricular myocardium which bear his name similar tissue reactions have been found in other portions of the circulatory system, namely the aorta, the auricular musculature, the arteries, and the veins. The authors have observed two cases of rheumatic disease of the aorta in which rupture of the aorta occurred following slight exertion and histological examination showed a typical Aschoff tissue reaction in that vessel.

Periarthritis nodosa occurs more frequently in males than in females, and is most common in the third decade of life. The symptoms are those of an acute infection, consisting principally of an irregular fever increasing weakness, loss of weight prostration, anemia tachycardia, splenomegaly and leucocytosis. In addition, the patient usually complains of pain in various portions of the body. Rheumatic pains are due to disease of the arteries and the muscles. Albuminuria and hematuria are the results

of closure of the renal vessels and infarction of the kidney. Intestinal hemorrhage or symptoms are caused by involvement of the mesenteric vessels. Subcutaneous nodules which appear as small firm pea sized masses along the course of an artery have been described.

Six general clinical types of periarthritis nodosa may be distinguished the gastro-intestinal, the renal the muscular the cardiac, the cerebral, and the cutaneous. As hematuria occurs in 74 per cent of the cases renal involvement is a special feature. Acute abdominal symptoms may simulate a surgical emergency. Deaths due to rupture of arterial aneurisms of the brain, lung intestines liver kidney and pericardium have been recorded.

The authors suggest that the cause of rheumatic fever and periarthritis nodosa may be the same. This theory is supported by the frequency with which periarthritis nodosa is accompanied by tonsillitis, arthritis, myalgia, and cutaneous rashes and by a case reported by Rothstein and Welt in which rheumatic fever and periarthritis nodosa were associated.

The authors report the case of a fourteen year-old boy who fifteen weeks before he was seen by them became drowsy and began to speak indistinctly and on admission to the hospital presented the typical picture of a severe rheumatic chorea. A faint haze of albumin was found in the urine. There were no rheumatic nodules. The administration of 30 gr of sodium salicylate every four hours resulted in little improvement. The choreic movements remained as violent as ever and the patient frequently complained of severe precordial pain headache and pain in the limbs. After seven weeks he complained of severe headache but this was unassociated with vomiting. Rigidity of the neck and Kernig's sign developed. On lumbar puncture the cerebrospinal fluid was found to be under slightly increased pressure and to contain an excess of globulin. Death followed the development of epileptiform attacks.

Autopsy disclosed a striking series of nodular thickenings along the branches of the coronary arterial system even in direct relation to the smaller intramural branches. This proved to be periarthritis nodosa. The heart muscle showed evidence of rheumatic carditis, and on the mitral valve there were typical rheumatic verrucous vegetations of recent origin. The peripheral vessels were unaffected. Close examination disclosed acute nodular disease of the visceral arteries which was especially evident in the hepatic, renal, suprarenal and pancreatic vessels.

ALTON OCHSNER, M D

Serdjukov M. and Jegorov B: The Development of Multiple Venous Thromboses in Genital Cancer as an Allergic Reaction of the Venous System (Ueber das Entstehen multipler Venen thrombosen beim Genitalkrebs als allergische Reaktion des Venensystems). *Ginek* 1934, p 54

The pathogenesis and etiology of venous thrombosis are extremely complicated and suggest an individual reaction of the organism to endogenous

and exogenous irritation. The authors believe that insufficient innervation and local changes in the vascular intima are important etiological factors. Nevertheless they regard as of special significance also the sensibility and allergy of the organism and a reaction of the venous endothelium to infection or other resorptive factors.

Of 3,718 women with puerperal infection who were treated in the Puerperal Infection Clinic of the Research Institute for the Protection of Mothers, Moscow during a period of ten years, thrombophlebitis developed in 28.2 per cent. About 25 per cent of the latter had a localized involvement of the uterine veins, about 10 per cent, a localized involvement of the crural veins, and about 15 per cent, involvement of multiple veins. The proliferative thrombophlebitis which occurred in 54.7 per cent of the cases had a mortality of 41.3 per cent. Forty-five and three tenths per cent of the deaths were due to venous thrombosis in the true pelvis and 54.7 per cent to venous thrombosis in the abdomen. Thrombosis of the upper extremities occurred in only 6 cases and was attributed to multiple injections of a 1 per cent solution of calcium chloride in quantities up to 300 c cm. In all of the cases it remained localized. In cases of surgically treated gynecological conditions, thrombophlebitis was rare; its incidence being only about 5 per cent, and it was local. Multiple foci of thrombophlebitis occurred in only 1 of 100 patients.

The case reported by the authors is of the greatest interest from the theoretical standpoint because it supports the new theory that venous thrombosis is due to a sensibility reaction of the body in allergic condition. It is of interest also because of the unusual rarity of multiple spread of venous thrombosis and because of its peculiar clinical course. The venous thrombosis developed acutely during prophylactic treatment with deep X-ray irradiation two years after a Wertheim operation for cancer. It spread along the superficial and deep veins of the extremities, pelvis, and internal organs, advancing gradually because of the products of cell destruction which entered the blood apparently from the cancer focus. The constant development of new thrombotic foci was due to the constantly increasing amount of protein-decomposition products. The association of infection could not be excluded as the not distant glands and cellular tissue may harbor infection for a long time. The latent infection together with the protein-decomposition products led, in the allergic state of the patient to a reactive sensibility and panendothelitis of the deep and superficial veins.

T. PETERKOV (Z)

BLOOD TRANSFUSION

Arvanitopulo, F. T.: The Study of the Morphology of the White Corpuscles of the Blood in the Prognosis of Operations. *A. N. Surg.* 1934, 6, 1.

The author reviewed the morphological character of the white cells of the blood of 500 patients who

had been subjected to operation. Postoperative complications developed in 28. In the cases of 3 of the patients with postoperative complications the morphological character of the blood was unknown. In the cases of 22 the blood was abnormal. In 3 it showed a leucopenia in 2 a lymphocytosis and monocytosis, and in 7, a leucocytosis. Of 400 patients with a normal blood formula who were operated upon, complications developed in only 3 (0.75 per cent). On the basis of his findings the author draws the following conclusions:

1. A study of the morphological character of the blood is indispensable for every surgical interference.

2. The ideal time for an operation is when the blood is normal as normal blood favors a good result with healing of the wound by first intention.

3. Operations performed when the blood is abnormal are followed with a certain regularity by post-operative complications.

4. A pyemic condition of the blood characterized by leucocytosis, neutrophilia with marked granulation of the protoplasm of the neutrophils, eosinopenia or total absence of eosinophiles, an increased number of thrombocytes, and a large number of dissolving cells is a contra indication to an operation of election as it often results in complications.

5. Operation is contra indicated by leucopenia as this is a sign of a decrease in the power of resistance of the organism and an operation performed in its presence may be followed by complications which not infrequently prove fatal.

6. In cases of lymphomocytosis (neutropenia) surgical interference may be followed by complications. Therefore a simple operation is preferable to a complicated procedure.

7. A study of the morphological character of the blood is the best clinical method of determining the resistance of the organism when operation is contemplated.

FRANK F. THURLOW, M.D.

Hesse, E.: Contra-Indications to Blood Transfusion (Die Gegenanzeigen fuer die Bluttransfusion). *Verhandl. d. Kaiserl. f. Bluttransfusion*. Leningrad, 1933.

Blood transfusion has become a popular method of treatment, but unquestionably its indications have been increased too far and its possibilities have been overestimated. It should be done only when there is a possibility of good results.

It is absolutely contra indicated in (1) cases with congestive phenomena in the lesser circulation, as in pneumonia and severe bronchitis (2) cases of organic heart disease with symptoms of decompensation, such as myocarditis, especially that following diphtheria (3) cases of purulent thrombophlebitis with symptoms of thrombolytic (4) cases of embolism (5) cases of fat embolism and (6) cases of liver insufficiency.

It is conditionally contra indicated in

1. Cases of atherosclerosis and considerably increased blood pressure. In such cases a preliminary test of the function of the heart should be made.

2 Renal diseases which begin with anuria or oliguria. In chronic nephritis and nephrosis special care is necessary. In blocking of the kidney after hemolytic shock, blood transfusion is urgently demanded. In doubtful cases the Volhard test is indicated.

3 Vascular thrombosis.

4 Leukemia. Careful dosage is necessary.

5 Diseases, such as pulmonary tuberculosis, in which there is a possibility of activating a dormant infection. E. Hirszt (Z)

LYMPH GLANDS AND LYMPHATIC VESSELS

Auvray: Cure of an Enormous Lymphangioma of the Face by Radium Therapy (Guérison d'un énorme lymphangiome de la face par la radium thérapie) *Bull et mém Soc nat de chir* 1934, 14 611

Auvray reports the case of a patient with an enormous swelling of the right side of the face in-

volving the cheek and upper lip and extending to the root of the nose and over the jaw. It was present at birth and was considered to be an inoperable lymphangioma.

A surface application of radium when the patient was two years old was followed by swelling, redness, suppuration, and ultimate reduction of the tumor to half its original size. A second surface application six years later caused no change. Four years later a single massive dose of radium was given by the implantation of seven needles of 10 microcuries each and one needle of 10 microcuries. One needle fell out after ten hours, but the rest remained in place for one hundred and forty three hours. Pain and suppuration were followed by complete disappearance of the tumor.

At the present time the skin of the cheek is somewhat pigmented, thickened and wrinkled. The mucous membrane is also slightly thickened and causes slight limitation of the opening of the mouth. M. M. Ziemer, M.D.

and exogenous irritation. The authors believe that insufficient innervation and local changes in the vascular intima are important etiological factors. Nevertheless they regard as of special significance also the sensibility and allergy of the organism and a reaction of the venous endothelium to infection or other resorptive factors.

Of 3,718 women with puerperal infection who were treated in the Puerperal Infection Clinic of the Research Institute for the Protection of Mothers, Moscow during a period of ten years, thrombophlebitis developed in 28.2 per cent. About 25 per cent of the latter had a localized involvement of the uterine veins about 10 per cent a localized involvement of the crural veins and about 15 per cent involvement of multiple veins. The proliferative thrombophlebitis which occurred in 54.7 per cent of the cases had a mortality of 44.3 per cent. Forty-five and three tenths per cent of the deaths were due to venous thrombosis in the true pelvis and 54.7 per cent to venous thrombosis in the abdomen. Thrombosis of the upper extremities occurred in only 6 cases and was attributed to multiple injections of a 1 per cent solution of calcium chloride in quantities up to 300 c cm. In all of the cases it remained localized. In cases of surgically treated gynecological conditions, thrombophlebitis was rare its incidence being only about 5 per cent, and it was local. Multiple foci of thrombophlebitis occurred in only 1 of 200 patients.

The case reported by the authors is of the greatest interest from the theoretical standpoint because it supports the new theory that venous thrombosis is due to a sensibility reaction of the body in allergic condition. It is of interest also because of the unusual rarity of multiple spread of venous thrombosis and because of its peculiar clinical course. The venous thrombosis developed acutely during prophylactic treatment with deep X-ray irradiation two years after a Wertheim-operation for cancer. It spread along the superficial and deep veins of the extremities, pelvis, and internal organs, advancing gradually because of the products of cell destruction which entered the blood apparently from the cancer focus. The constant development of new thrombotic foci was due to the constantly increasing amount of protein-decomposition products. The association of infection could not be excluded as the not distant glands and cellular tissue may harbor infection for a long time. The latent infection together with the protein-decomposition products led, in the allergic state of the patient, to a reactive sensibility and periendothelitis of the deep and superficial veins.

T. PERSSON (Z)

BLOOD TRANSFUSION

Arantopoulos, F. T.: The Study of the Morphology of the White Corpuscles of the Blood in the Prognosis of Operations. *Ann Surg* 1934, 6, 1

The author reviewed the morphological character of the white cells of the blood of 500 patients who

had been subjected to operation. Postoperative complications developed in 28. In the cases of 3 of the patients with postoperative complications the morphological character of the blood was unknown. In the cases of 23 the blood was abnormal. In 3 it showed a leucopenia in 2 a lymphocytosis and monocytosis, and in 7, a leucocytosis. Of 400 patients with a normal blood formula who were operated upon, complications developed in only 3 (0.75 per cent). On the basis of his findings the author draws the following conclusions:

1. A study of the morphological character of the blood is indispensable for every surgical interference.

2. The ideal time for an operation is when the blood is normal as normal blood favors a good result with healing of the wound by first intention.

3. Operations performed when the blood is abnormal are followed with a certain regularity by postoperative complications.

4. A pyæmic condition of the blood characterized by leucocytosis, neutrophilia with marked granulation of the protoplasm of the neutrophils, eosinopenia or total absence of eosinophiles, an increased number of thrombocytes, and a large number of dissolving cells is a contra-indication to an operation of election as it often results in complications.

5. Operation is contra-indicated by leucopenia as this is a sign of a decrease in the power of resistance of the organism and an operation performed in its presence may be followed by complications which not infrequently prove fatal.

6. In cases of lymphomonocytosis (neutropenia) surgical interference may be followed by complications. Therefore a simple operation is preferable to a complicated procedure.

7. A study of the morphological character of the blood is the best clinical method of determining the resistance of the organism when operation is contemplated.

HENRIET F. TRUMBULL, M.D.

Hesse, E.: Contra Indications to Blood Transfusion. (*Die Gegenanzeigen fuer die Bluttransfusion*) *Verhandl d. 1. Konferenz f. Bluttransfusion* Leningrad, 1933

Blood transfusion has become a popular method of treatment but unquestionably its indications have been increased too far and its possibilities have been overestimated. It should be done only when there is a possibility of good results.

It is absolutely contra-indicated in (1) cases with congestive phenomena in the lesser circulation, as in pneumonia and severe bronchitis (2) cases of organic heart disease with symptoms of decompensation, such as myocarditis, especially that following diphtheria (3) cases of purulent thrombophlebitis with symptoms of thrombolysis (4) cases of embolism (5) cases of fat embolism and (6) cases of liver insufficiency.

It is conditionally contra-indicated in (1) Cases of atherosclerosis and considerably increased blood pressure. In such cases a preliminary test of the function of the heart should be made.

so that they would lodge in the lung. When the emboli were large, averaging 10 by 4 mm. the size used by Cutler and Holman, massive pulmonary infarction resulted. When the emboli were of medium size, averaging 7 by 3 mm. the infarction was less massive. When the emboli were small, averaging 4 by 2 mm., only small localized areas of change were found in the lung. Bottin recommends that emboli of a standard size, preferably small, be used in all experimental work. He found that the clinical, roentgenological, and pathological changes were essentially the same whether the embolus was sterile or infected. The lung became enlarged, congested, and firm and presented an area of softening which was surrounded by leucocytes but showed little or no pus.

While in the dogs with small emboli, the temperature, pulse, and carbon-dioxide-combining power remained essentially unchanged and the respiratory rate increased only slightly, the volume of tidal air as determined with Tissot's apparatus decreased markedly. This decrease could be increased by making the dog run over a measured course (100 meters) and became less as the condition of the lung improved. Bottin suggests that in studies of experimentally induced lung abscess it may be of aid in determining the extent of the process.

M. M. ZIMMERMAN, M. D.

ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Clairmont P. The Judgment and Treatment of Furuncle of the Face (Beurteilung und Behandlung der Gesichtsfurunkel). *Med. Woch.* 1934 p. 432.

The mortality of furuncle of the face is still very high—according to Rodelius, 8.7 per cent. Of 116 patients treated clinically for the condition, 5 (4.3 per cent) died, all of a metastatic pyogenic generalized infection. Rapidly developing swelling on the second to the sixth day with a temperature of over 39 degrees C. is to be regarded as a sign of blood stream infection. Swelling toward the medial angle of the eye is particularly dangerous because of the proximity of the angular vein.

In the cases reported the treatment was extremely conservative. Aspiration and incision were avoided and talking and chewing were forbidden. Morphine was given at night. Linseed poultices or warm moist compresses were applied day and night. Even when fluctuation appeared no incising was done. Every mechanical insult increases the danger. X-ray irradiation and Bier's hyperemia which have been recommended by Baensch, were used as adjuvants in selected cases. The effects of the injection of autogenous blood recommended by Haerens and of the intravenous injection of antiseptics are disputed. For cases of progressive thrombophlebitis the author advocates surgical therapy to break the venous path of infection. This must be done at once when vascular spread is suspected. After chills have begun it is useless.

Clairmont reports two cases of thrombophlebitis which were cured by strictly conservative treatment. According to experience, however active intervention is preferable in thrombophlebitis. The breaking up of the venous path may be done in three chief sites: (1) beneath the medial angle of the eye along the course of the angular vein, (2) above the clavicle on the internal jugular vein along the posterior border of the sternocleidomastoid, and (3) along the anterior facial vein in the submandibular region.

In conclusion Clairmont says that the future management of furuncle of the face will consist chiefly in the local application of warm moist compresses and early proximal and distal vein ligations.

K. ADEL (Z.)

Okulova A.: Phlegmons of the Foot and Their Anatomical Routes of Spread (Fussphlegmonen und anatomische Wege ihrer Verbreitung). *Vor. chir. Arch.* 1934 xxx, 370.

In experiments in which the author injected a 7 per cent warmed and colored gelatine solution into various parts of the feet of fifty cadavers it was found that the injected solution first collected in certain rather sharply delimited connective tissue pockets and that it invaded the neighboring spaces only after these pockets were filled and the partitioning membranes had ruptured. By this method a number of such connective tissue pockets were demonstrated—one each in: (1) the dorsal side of the foot and toes, (2) the plantar side of the toes, (3) the interdigital regions, and (4) the center (5) medial and (6) lateral parts of the sole of the foot.

From a comparison of the findings of these experiments with clinical observations Okulova concluded that in general the spread of the injected fluid corresponded to that of collections of pus in the foot. On the basis of his observations he differentiates the following clinical types of suppurative processes in the foot: paronychia of the dorsal and plantar surfaces of the toes; phlegmons of the dorsal surface of the foot; phlegmons of the interdigital spaces; phlegmons of the sulcus between the toes and the sole of the foot; and phlegmons of the sole of the foot. Of these the processes in the middle region of the foot are particularly important because of their frequency, the intensity of their inflammatory manifestations, the ease with which they form pus pockets, and their tendency to involve higher structures of the foot and leg.

On the basis of the findings of his anatomical studies and clinical observations, Okulova recommends the following incisions:

Paronychia: a lateral incision following the long axis of the tendon.

Interdigital phlegmons: a transverse incision of the interdigital sulcus with extension if necessary to the dorsum or the plantar surface of the foot.

Phlegmons of the dorsum of the foot: a long incision following the tendon of the musculus extensor digitorum longus and another somewhat nearer the lateral margin of the foot and ankle.

PHYSICOCHEMICAL METHODS IN SURGERY

ROENTGENOLOGY

Levy L., West, D. W., Edgerton, H. A. and Brock, R. B.: The Elimination of Afterglow and Latent Phosphorescence from Fluorazure (Zinc Sulphide) Intensifying Screens. I. General Description. II. Physical Investigation. *Bull J. Radiol.* 1934, vii, 344, 348.

In a previous report the authors described a new and much more rapid intensifying screen made with a new type of zinc sulphide having a brilliant blue fluorescence. This screen showed an afterglow which was quite visible to the naked eye and caused serious difficulties such as fogging and double image production when the screens were employed for a series of roentgenograms made at short intervals. In order to overcome these difficulties, many hundreds of different preparations were made and examined. As a result of this investigation it was found possible so to modify the preparation that the afterglow and the production of double images were reduced to such a degree that they caused no practical inconvenience. The elimination of the afterglow has slowed down the speed of the screen from 30 to 35 per cent but even with this loss the screen made with the new preparation, to which the name "improved fluorazure" has been given is still considerably faster than the screens which are commonly employed.

In the course of the investigations made to perfect the new screen a number of extremely interesting phenomena related to the fluorescence and phosphorescence of the materials used for intensifying screens were observed. In addition to the previously known effects of multiple image formation due to afterglow from exposure of the screen to white light and X-ray exposure, a latent fluorescence and a latent afterglow which, so far as the authors are aware, have not been described heretofore, were noted. These phenomena and their effects as related to exposures made at varying intervals and with variable intensities are discussed at some length.

In conclusion the authors state that both tungstate and fluorazure screens can reproduce previous exposures in a similar variety of ways, but from experience with tungstate screens and a knowledge of the magnitude of the exposures necessary to produce the effects it is evident that they are of scientific rather than practical importance. The fluorazure screens possess the characteristic property of being capable of producing latent fluorescent images, but the exposures which are necessary to produce them are very heavy and in case of accidental serious over-exposure the latent image can be obliterated by a very short exposure to white light.

ADOLPH HARTUNG, M.D.

Cook, H. H.: Hepatolienography. An Experimental Study of the Elimination of the Contrast Medium. *Arch. Surg.* 1934, xliii, 29.

The experiments reported were carried out on twenty rabbits. Each animal was given 2.5 cc. of colloidal thorium dioxide per kilogram of body weight by aseptic intravenous injection. It was then studied roentgenologically at regular intervals and its organs were examined at necropsy.

Group 1 consisted of ten rabbits for preliminary study. In all of the roentgenograms taken twenty-four hours after the last injection the liver and spleen appeared smooth and distinct. In roentgenograms made fifteen, thirty and forty-five days after the injection there was no evident diminution in their shadows. In small animals the shadows of the kidneys, suprarenals, and marrow of the larger bones were visible. Microscopic study of the liver, spleen, suprarenal glands, and kidneys made one, fifteen, thirty and forty-five days after the injection showed no evidence of a decrease of granules of thorium in the phagocytic cells of these organs.

Group 2 consisted of two rabbits. Roentgenograms were made twenty-four hours after the injection of thorium. One daily injection of 100 cc. of a 0.9 per cent saline solution was given for fourteen consecutive days. Roentgenograms made on the following day and fifteen and thirty days after the injection of saline solution showed no evident change in the organs when they were compared with the roentgenograms made twenty-four hours after the injection of thorium dioxide. Microscopic examination of the organs forty-five days after the last injection of saline solution showed no distinct evidence of a decrease in the number of granules of thorium as compared with the number in the same organs of the animals of Group 1.

In Group 3 the injection of the thorium dioxide was followed for fourteen consecutive days by one daily intravenous injection of 100 cc. of a 10 per cent solution of dextrose. In Group 4, by one daily intravenous injection of 100 cc. of a 5 per cent solution of calcium chloride in 0.9 per cent saline solution. In Group 5, by one daily subcutaneous injection of 0.5 cc. of combined typhoid vaccine and in Group 6, by one daily subcutaneous injection of 0.25 cc. of epinephrine. In no case did roentgen or microscopic examination show any diminution in the density of the shadows or in the number of granules of thorium after forty-five days.

The author concludes that since experimental investigations reveal no evident elimination or distribution of the thorium, the intravenous injection of thorium dioxide for diagnosis should be limited until a positive method of causing rapid elimination of the thorium is found.

E. C. BAKER, M.D.

Nemenow M I: The Effect of Roentgen-Ray Exposures of the Cerebral Cortex on the Activity of the Cerebral Hemispheres. *Radiology* 1934 xxii, 86.

Numerous investigations to determine the effect of the roentgen rays on the cerebral cortex of animals and human beings have yielded little more than negative results, at least so far as disclosing either histological changes in the cerebral tissue or degenerative changes in the ganglion cells of adult animals. The question as to whether the roentgen rays have no effect on nerve cells or whether the changes produced are of such a nature that it is impossible to observe them by the means now available led the author to study the effects of irradiation on function. Experiments conducted by Pavlov in studying the conditioned reflexes in trained experimental animals seemed to offer possibilities of demonstrating functional changes. These experiments, which centered largely upon salivary secretion in response to various stimuli, are described at some length.

In the author's experiments, dogs whose response to definite stimuli were known were subjected to variable doses of roentgen rays. In summarizing the findings in the case of the first dog, which was given 1,500 and 2,500 r units at different times the author states that irradiation of the brain caused a marked decrease of the reflexes which was especially evident when the stronger stimulation was used. In addition, considerable successive inhibition (negative induction) following differentiation was noted.

In the case of the second dog which was given 3,500 r there was a marked decrease of all reflexes in the first six days, followed by a considerable increase in the next eleven days. During the next eight days the reflexes again decreased and there after they remained at the lower values. After a subsequent irradiation with 2,800 r they showed a slight increase but remained below the values observed previous to the first exposure. Later they again showed a tendency to decrease.

The author plans a continuation of the investigation on a larger scale. He believes that his theory

that roentgen rays affect the activity of the cerebral hemispheres, causing an inhibitory condition, has been confirmed. In conclusion he states that the study of conditioned reflexes seems to offer many possibilities not only for the determination of the effects of irradiation, but also for the solution of a number of problems which are connected with the physiology of the cerebral hemispheres.

ADOLPH HARTUNG, M D

Friedman, A. B. Superficial Inflammatory Diseases. Treatment by Radiation Therapy. *Am J Surg* 1934, lxxv, 107.

Friedman states that the treatment of superficial inflammatory disease by irradiation is not as generally known or as widely practiced as it should be. He gives a brief review of the literature relating to it. He says that its rationale is not yet fully understood. Most workers believe that there is an increase in antibodies in the irradiated tissue which may be liberated during the breakdown of the radiation sensitive and easily destroyed leucocytes. Comparatively small doses of weakly filtered irradiation are generally given. Friedman uses a 135 peak kilovoltage and an aluminum filter of 3 mm. He gives from 125 to 350 r units to each area.

The results in 1,018 cases are reviewed. These included cases of acute and chronic lymphadenitis, cellulitis and lymphangitis, carbuncle, furunculosis, acne, osteomyelitis, erysipelas, adnexal disease, breast abscess, tuberculous adenitis, parotitis, mastoiditis, paronychia, pharyngitis, and Ludwig's angina. With the exception of the cases of chronic osteomyelitis, which were not benefited, all of the conditions treated responded favorably to a sufficient degree and in a sufficiently large number of cases to warrant the application of the treatment. The results obtained in each group of cases are described in a general way. In summarizing the effects of the treatment Friedman says that irradiation therapy is highly beneficial in superficial infections, being curative in the early cases and shortening the clinical course in more advanced cases.

ADOLPH HARTUNG, M D

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Middleton, D. S.: Studies on Prenatal Lesions of Striated Muscle as a Cause of Congenital Deformity. *Edinburgh M J* 1934, 1b, 40

Middleton discusses congenital tibial kyphosis, congenital high shoulder and myodystrophia fetalis deformans.

Three cases of congenital tibial kyphosis are reported. The characteristic features of this condition are:

1. An angle in the tibia which is always salient anteriorly and situated at the junction of the middle and distal thirds of the diaphysis of the bone.

2. An extreme and fixed talipes equinus at the ankle joint, which can be corrected immediately by division of the tendo calcaneus or excision of the calf muscles inserted in that tendon.

3. Shortness and thinness of the lower limb as a whole but especially below the knee.

4. A puckered depression in the skin over the salient angle of the tibial deformity.

5. The frequent co-existence of other anomalies of development.

Middleton believes that the bony deformity is secondary to the shortening of the calf muscles. He ascribes the latter to a relative failure during intra-uterine life of the last stage of growth in length of the developing myocyte to which leads to a progressive retraction of the tendo calcaneus and hence to the production of an equinus deformity at the ankle.

Two cases of congenital high shoulder are reported. In one of them there were macroscopic changes in the muscles of the shoulder girdle which were interpreted as indicating interruption of the normal differentiation of the muscle fibers at the myoblastic stage. It is pointed out that the congenital anomaly of development is not confined to the muscle but affects the mesodermic structures in the cervical region as a whole. This is evident in the irregular vertebral segmentation and in the muscular atrophy in the affected area of the limb bud. Middleton believes that the striking deformity may be attributed to this muscular change and the consequent failure of growth and migration to allow descent of the shoulder.

Myodystrophia fetalis deformans is a congenital deformity affecting both upper both lower or all four extremities. It consists of club-hands and club-feet without bony aplasia, and is accompanied by more or less limitation of the normal range of movement at the points of the affected limbs. The author cites evidence indicating that it is due to a fatty degeneration of the limb muscles occurring during intra-uterine life. He states that the process

is one of degeneration of formed and differentiated muscle fibers—not a myoblastic dysplasia. It is analogous to the muscular dystrophies of postnatal life.

ELIZABETH M. CRANSTON

Ravenna, F. and Canella, C.: A New Form of Severe Infantile Anemia Associated with Diffuse Osteoporosis (*Una forma nuova di grave anemia infantile associata ad osteoporosi diffusa*). *Pedidia* Rome, 1934, 11, 562, 567.

The case reported by the authors was that of a boy six years of age. When the child was two years old he developed an unusual enlargement of the head and abdomen and a peculiar discoloration of the skin. At the age of four years he was treated for nephritis, gastro-intestinal disturbances, and the abdominal enlargement.

On physical examination the head was found to be enlarged particularly in the vault of the cranium. The physiognomy was typically mongolian. The skin was grayish yellow. The cervical and inguinal glands were moderately enlarged. The spleen extended to a point three fingerbreadths below the costal arch. The abdomen was enlarged and dome shaped.

The Wassermann test of the blood was negative. The red cell count was 1,370,000, the white cell count, 4,920 and the platelet count, 140,000. The hemoglobin was 10 per cent. The differential count showed polymorphonuclears 52 per cent, basophils 3 per cent, monocytes 1 per cent, lymphocytes 44 per cent and a marked anisomicrocytosis. Reticulocytes were rare.

Röntgen examination disclosed a diffuse osteoporosis and small areole in all of the bones of the skull rarefaction of the vertebrae, an enormous heart shadow, osteoporosis with areole in the ribs and rarefaction of the epiphysis and metaphysis with scattered areole in the spongy bone of the tibia, femora, and humeri. The basal metabolism was -21 per cent.

Biopsy of the bone marrow showed the findings of a typical erythroblastic anemia with the presence of all forms of megaloblasts and macroblasts. There was little granulocytic reaction.

The author summarizes the characteristic findings as a mongolian facies, a grayish-yellow discoloration of the skin, severe anemia with erythroblasts in the circulation, and typical skeletal changes.

PETER A. ROW, M.D.

Strandell, B.: On the Influence of Exercise on the Blood Sugar. Especially in Connection with Glucose Intestation. *Acta med Scand* 1934, Supp. 14.

The author studied the influence of muscular exercise on the blood-sugar concentration especially

in connection with the ingestion of glucose but also in the fasting state with and without the injection of adrenalin. Of the 93 subjects, 55 were normal persons, among whom were 9 sportsmen. Seven of the subjects, 3 of whom were diabetics, had glycosuria, and 31 were suffering from various illnesses. One hundred and seventy of the 245 pages of the monograph are taken up by case reports. The duration of the experiments averaged between three and four hours. During this time frequent tests of capillary and venous blood were made by the Hagedorn-Jensen method. In many cases tests were made as often as once or twice a minute after discontinuance of the exercise. The exercise was performed on the bicycle ergometer or by running or swimming.

It was found that after the ingestion of glucose exercise of sufficient intensity and duration usually produces a characteristic change in the blood-sugar curve. Long-continued exercise beginning simultaneously with the ingestion of glucose causes a levelling of the curve. With intensive exercise the line may be almost horizontal or show a decrease. With relatively slight exercise, the blood sugar level may increase as at rest. If the exercise is discontinued within a certain time there is generally an increase in the blood sugar which may resemble that occurring during rest after the ingestion of glucose. Exercise begun at the time of the maximum rise in the blood sugar after the administration of glucose causes a decrease in the blood sugar level more rapid than that observed during rest. When the exercise is discontinued within a certain time, a subsequent rise in the blood sugar producing a "dromedary shaped" curve, is common.

A study of the glucose content of the stomach at different times after the ingestion of glucose in experiments with and without exercise showed that the non appearance of a rise in the blood sugar after the administration of glucose and exercise cannot be due to deficient resorption from the stomach and must be due to a process conditioned by the exercise. On the other hand, the pronounced and continued increase in the blood sugar which occurs after discontinuance of exercise has its origin in the quantity of glucose which still remains in the stomach.

Immediately after the discontinuance of exercise there is often a very transitory increase in the blood sugar indicating transportation of glycogen from the liver to the muscles. Therefore, while exercise has a reducing influence on the blood-sugar curve it causes, at the same time, a process which acts in the opposite direction. In the author's opinion the latter process is regulated chiefly by adrenalin although other factors may play a rôle. Exercise of suitable duration and intensity begun when the blood-sugar curve is at the maximum after the ingestion of glucose supports the action of the insulin and at the same time produces a disturbance of the normal insulin effect so that the glucose remaining in the stomach can cause a new increase in the blood sugar.

After a subcutaneous injection of adrenalin the blood sugar curve is only very slightly influenced by exercise of the intensity and duration used in the experiments reported. WALTER H. NADLER, M.D.

Cicceri, C. and Gabrielli, B.: The Effects of Anesthetic Block of the Splanchnic Nerve on the Blood-Sugar Curve and Arterial Pressure in Normal and Diabetic Individuals (Effetti del blocco anestetico dello splancnico sulla curva glicemica e sulla pressione arteriosa in individui sani ed in diabetici). *Arch. ital. di chir.* 1934, xxv, 89.

The points of departure of the studies reported in this article were the antagonistic action of insulin and adrenalin on carbohydrate metabolism and the control of adrenalin secretion through the great splanchnic nerve. The authors' experience in suprarenal denervation includes two bilateral operations performed in two stages on diabetics and an operation performed on the left side in the case of a patient with thrombo-angiitis obliterans. The carbohydrate metabolism and the blood pressure were studied carefully before and for a long period after the operation. The unilateral intervention gave only transitory results, but after the bilateral operation a marked diminution of the blood sugar glycosuria, and arterial tension persisted after a year.

Because of the seriousness of the operation on diabetics and the possibility of a variation in the results according to the grade and combination of endocrine disturbances, a preliminary study under transitory conditions such as blocking of the left splanchnic nerve with alypin is advisable to find out what results are to be expected from a direct operation. The authors therefore studied the blood-sugar and blood-pressure curves of five normal and five diabetic individuals after the administration of 50 gm. of glucose, making observations every half hour for four hours. Three days later the experiment was repeated the left splanchnic nerve being anesthetized thirty minutes after the ingestion of the glucose.

In the cases of normal individuals the splanchnic blocking was followed regularly by a sharp and marked drop in the arterial tension lasting more than two hours. The blood-sugar curve showed an immediate rise due to splanchnic stimulation, which was quickly followed by a fall to less than the pre-operative level. This hypoglycemic phase was succeeded by a slight rise. In the diabetics, the results were in general similar but more variable and less definite. There was a rapid diminution of the alimentary glycosuria, followed in the third hour by a slight rise which was interpreted as a secondary curve. Therefore after splanchnic block the diabetic curve tended to approach the normal. Severe cases and the cases of renal diabetics constituted exceptions. In the former the modifications were negligible, and in the latter the effect of the splanchnic block was more evident in the renal threshold for glucose than in the blood-sugar curve.

These findings demonstrate that splanchnic blocking produces the same changes in the blood pressure and carbohydrate metabolism as suprarenalectomy and unilateral denervation of the suprarenals. In cases of diabetes in which splanchnic anesthesia changes the curve of alimentary glycemia to approximately normal, permanent blocking by alcohol is indicated.

The results of the authors' studies are shown in tabular and graphic form, and the article is supplemented with a bibliography. **M. E. Mosen, M.D.**

Andrews, C. H. Viruses in Relation to the Etiology of Tumors. *Lancet* 1934 Oct 14, 63, 117.

Andrews reviews the facts and arguments in favor of the theory that tumors of mammals may be of virus origin. He draws the following conclusions:

1. The filtrable fowl tumors are true tumors differing from the tumors of mammals only in that a causative agent or agents can be demonstrated apart from the cells.

2. The properties of the agent correspond so closely to those of known viruses that exclusion of the agent from the virus group is not justified. The only grounds for such exclusion would be the occurrence of the agent in spontaneous tumors in circumstances under which the presence of a virus would not be expected. Such grounds do not seem reasonable.

3. Knowledge of the natural history of other viruses makes it easy to understand how the phenomena of tumor growth might be produced by a virus, but the mechanism of the inception of a spontaneous tumor growth remains difficult to explain.

4. The theoretical objections to the parasitic theory of cancer are no longer tenable in view of the facts known regarding filtrable fowl tumors.

5. Discussion of the conception of an indigenous virus has suggested lines along which the parasitic hypothesis might be reconciled with the facts which at first appear to render it improbable.

HERBERT F. THURSTON, M.D.

Bignami, G. and Ferretti, L. Calcifications in Neoplastic Processes (Le calcification nei processi neoplastici). *Rivista* 1934 vol 6:11.

Calcium usually reaches the body as calcium phosphate or calcium carbonate in solution or fine granules. In the insoluble soluble state it is present throughout the body. In the visible form it is deposited in the bone only under normal conditions. The distribution of calcium is closely related to the function of some of the glands of internal secretion, especially the parathyroid glands and the thymus. Its elimination occurs chiefly through the intestines, but some of it is excreted through the kidneys. Throughout these processes of assimilation or change, and excretion the acid-base balance is doubtless of great importance. Under pathological conditions calcium may increase or decrease abnormally in all of the tissues.

The pathological deposition of calcium may be manifested as calcification in normal tissues resulting

from a disturbance of metabolism or calcification occurring as a manifestation of local retrogressive changes in the tissues when the calcium metabolism is normal. Examples of the former are the metastatic calcification of Virchow and the calcification of gout. The second type, dystrophic calcification, is seen in innumerable situations. The changes causing the local dystrophy of the cellular metabolism which leads to calcification are not known.

The most common sites of calcification in the tissues include all normal tissues in which hyaline degeneration has occurred, cells and tissues affected by coagulation necrosis, the products of exudative inflammation coagulated blood in the body, the connective tissue of inflammatory newgrowths such as that occurring in pericarditis, the caseation of tuberculous and syphilitic ducts containing inspissated secretions, dead calcified fetuses of intra-abdominal pregnancies, casts in the urine and the stroma of various newgrowths or tumors.

As calcification often precedes obvious evidence of a newgrowth, the presence of calcification occasionally may reveal the presence of newgrowths otherwise not easily demonstrable, such as intra-cranial tumors and tumors of the liver and pancreas. In some tumors the appearance of calcification traces the course of the metastases.

The authors discuss at length the characteristics of calcification, especially from the roentgenological point of view in chondromata, fibromata, fibromyomata, cystic tumors, gliomata, vascular tumors, sarcomata, carcinomata, and cholesteatomata.

A. LOUIS ROSE, M.D.

Chlapoverensky V. Lipogranulomatosis—Fat Necrosis, Fatty Granulomatosis—and Its Importance in Clinical Surgery (La lipogranulomatose—nécrose graisseuse, granulomes graisseux—et son importance dans la clinique chirurgicale). *Rev de chir. Par.* 1934, 101, 187.

The author traces the development of our knowledge of fat necrosis from the first contribution by Chauri down to the present time, and reports in detail the clinical and pathological findings in fifteen cases studied at the Surgical Clinic of the Second Institute of Medicine at Moscow.

In discussing the etiology he assumes that an essential part of the process is an area of focal necrosis of the cellular tissue with subsequent disintegration of the free fat into fatty acids and soaps. The decomposition products that remain provoke an inflammatory reaction in the surrounding connective tissue, a granuloma that is more or less characteristic. As this process requires the presence of both necrosis and inflammation, the old term "fat necrosis" is not accurate.

The histopathological picture seen in the beginning is that of a nodule with a central core made up of a homogeneous mass of fat cells which have lost their staining characteristics and are surrounded by a group of less altered tissue showing hyperemia and an infiltration of small round cells of the lymphoid

series. This is the stage of fat necrosis. Later, the homogenous core exists only as droplets of fat remaining free or engulfed by inflammatory cells. At this stage the inflammatory reaction consists of lymphocytes, polyblasts leucocytes, and epithelioid cells. This is the proliferative or granulomatous stage. At a still more advanced stage the granulation tissue is composed chiefly of epithelioid cells and large giant cells which subsequently may give way to fibrosis, calcification or cyst formation. Variations of these end results and the staining characteristics are discussed in detail.

The condition is usually manifested clinically by slightly painful firm nodules ranging in size from that of a pea to that of a fist. The nodules may or may not be movable. The sensory disturbances generally depend upon their relationship to nerve trunks. The nodules may be single or multiple. They generally diminish in size during the course of their development. While a clinical diagnosis may be difficult it is often possible if the condition is kept in mind.

The author suggests the following classification based on the cause: (1) infection (oleogranulomata in the true sense of the term) (2) traumatic (3) perinflammatory (4) chemical (5) neuropathic and (6) spontaneous (origin unknown). The various types are discussed on the basis of the author's experience and the cases reported by others.

NATHAN A. WOMACK M.D.

Oliver, M. and Scott E.: Adamantinoma or Ameloblastoma of the Hypophyseal Duct Region.
Am J Cancer 1934 xxi, 501

Squamous epithelial rests in the region of the infundibulum and capsule of the anterior lobe of the hypophysis are commonly believed to be derived from remnants of the embryonic hypophyseal duct of the pars buccalis. Origin from cells of the pars tuberalis has been suggested. Fifty cases of verified adamantinoma of the hypophyseal region and three probable cases lacking histological verification were collected by the author from the literature. In most of them the condition was associated with Froelich's syndrome, optic nerve atrophy and eye muscle disturbances. In none was there a history of acromegaly. Symptoms of intracranial pressure were common. The completeness of this picture is correlated with the age of the patient and the extent of the injury done by the tumor to the hypophysis, tuber cinereum and neighboring brain structures. In the majority of the cases which were reviewed the condition developed during adolescence or early adult life.

A case of histologically verified adamantinoma of the hypophyseal duct region in a man forty four years of age is reported. Autopsy revealed a tumor mass lying in the ventral median line just posterior to and compressing, the optic tracts, chiasm and nerves ventrad to the tuber cinereum and substantia perforata posterior and anterior to the corpora mamillaria. As viewed from the ventral surface the tumor measured 3 cm. in the anteroposterior direc-

tion and was 5 cm in width. It was fairly firm. Viewed in cut section it showed a ventral firm portion containing a fine, gritty material and many small cysts filled with hyaline material and, just dorsad to this portion and ventrad to the third ventricle, a cyst 2 cm wide, 3 cm high, and 3 cm. long was found which was filled with fluid.

JOSEPH K. NARAT M.D.

Bergstrand, H.: Osteitis Fibrosa of Recklinghausen Heterotopic Parathyroid Adenoma, Metastases of a Benign Adenomatous Struma and Adenoma of the Left Adrenal in the Same Patient.
Am J Cancer 1934 xvi, 581

The case reported was that of a woman sixty-four years of age who sustained a spontaneous fracture of the left arm just above the elbow. For twenty years previous to this accident she had been in good health.

X ray examination disclosed a multicystic appearance of the distal end of the humerus. The blood calcium varied between 15 and 17 mgm per 100 c.c. A diagnosis of osteitis fibrosa of von Recklinghausen was made. The patient became apathetic and anemic, vomited repeatedly, and died seven weeks after the injury.

At autopsy a partially calcified and encapsulated solitary adenoma about the size of a plum was found in the left lobe of the thyroid gland. Four parathyroids of normal size were found at the usual sites. In both lungs there were numerous tumor metastases, with a reddish-gray, rather soft surface. The largest of these was the size of a pea. A large tumor metastasis was found in the pleura between the sixth and seventh ribs and a tumor about the size of a pigeon's egg in the thymus in front of the pericardium. Microscopic examination showed the latter to be a parathyroid adenoma. The tissue consisted of large epithelial cells rich in protoplasm and arranged in solid follicles surrounded by capillaries. The cells contained practically no fat.

Microscopic examination showed the four parathyroid glands to be normal. A small and encapsulated adenoma was discovered in the adrenals, and large deposits of calcium were found in the parenchyma and interstitial spaces of the kidneys. The lung metastases presented the structure of a thyroid adenoma with the tumor cells arranged in bands or small and usually empty follicles. Microscopic examination of the bones disclosed everywhere the osteolytic process characteristic of osteitis fibrosa of von Recklinghausen. The haversian canals were greatly widened and were filled with connective tissue and giant cells of the osteoclastic type arranged along the walls in small cavities in the bone. There was no evidence of new bone formation, and there were no cysts or giant-cell tumors.

The author suggests that the presence of adenomas in three internal secretory glands points to an embryonal disturbance in all of them. Contrary to Jaffé, he believes that osteitis fibrosa of von Recklinghausen may occur without new bone formation.

cysts, or giant-cell tumors, and that it is essentially a general osteolysis around the bone corpuscles giving rise to the formation of new bone canals and widening of the old canals. The liberated bone corpuscles are changed into giant cells by amitotic division, and the canals are filled with connective tissue instead of bone marrow.

In conclusion Bergstrand calls attention to the fact that the histological structure of parathyroid adenoma is very much like that of the normal parathyroid gland of the newborn infant.

LESTER R. DRAOETOR, M.D.

Todd, A. T. The Selenid Treatment of Cancer
Brit J Surg 1934, vii, 69

The author considers cancer an infectious disease. There is little cause for any other conception. He says that there is a body defense mechanism against cancer located in the mesoblastic tissue which usually fails. This is called "junction tissue" and consists of fibroblasts, lymphocytes, plasma cells, and macrophages. The macrophages are the key cells as they govern the function of the others. They are influenced only by the colloids.

The treatment described by the author consists in impregnating the body tissues by the intravenous injection of selenium colloid and then using external irradiation.

Irradiation alone increases the junction tissue. If the organism is first saturated with selenium, irradiation acts upon the selenium particles and in many cases the body defense mechanism is increased sufficiently for cure.

In all of the cases treated by this method which are reviewed by the author the condition was hopelessly advanced. One-fifth of the patients were moribund. In the author's use of the method no selection of neoplastic diseases or body sites is made—all cases are accepted if the patient will co-operate. The selenium colloid is given intravenously forty-eight hours before the X-ray therapy. The focal reaction to the injection and the X-ray reaction are the guides to the treatment. Both the injection and the irradiation are repeated at weekly intervals until the reaction is satisfactory and starts to wane. The patient is then treated for six months, two different colloids being given alternately each week. If clinical progress is satisfactory after nine months, the treatment is discontinued but the patient is kept under observation for six months longer before he is discharged. "So far no discharged case has ever returned with active disease of the type originally treated. If the clinical results are unsatisfactory the treatment is continued until the patient is moribund."

The method has been used since May 1931. Of forty-seven patients who were given treatment considered adequate in the first six months, fifteen were discharged as cured. Three died of some other cause, autopsy showing no growth. Equally good results have been obtained in cases treated more recently.

HARRY C. SALTZBERG, M.D.

DUCTLESS GLANDS

Houssay, B. A.: The Influence of the Pituitary on Basal Metabolism and on Specific Dynamic Action. *Endocrinology* 1934, xiv, 409.

Investigations carried out by Houssay and others at the Institute of Physiology, Buenos Aires, with regard to the influence of the hypophysis on the basal metabolism have been reported yearly since 1930. Most of the experiments have been performed on dogs. The animals were trained to keep quiet and motionless without anesthesia and without being tied during the tests.

In twenty-two of twenty-seven dogs hypophysectomy caused an average decrease in the basal metabolism of -16 per cent. The decrease was due to the anatomical hypothyroidism (flattened epithelium colloid more dense and devoid of vacuoles, iodine content increased) and the functional hypothyroidism induced by the hypophysectomy. In the animals showing no decrease only a minor degree of thyroid atrophy was found.

Pancreatectomy produced little or no increase in the basal metabolism of hypophysectomized dogs, whereas it was followed by a definite increase in dogs from which the hypophysis had not been removed.

Hypophysectomized animals showed a decrease but not total abolition of thyroid secretion. This was evidenced by the fact that thyroidectomy further decreased the basal metabolism (from -12 per cent when only hypophysectomy was done to -33 per cent when the thyroid gland was removed at a second operation) thereby equaling the condition of animals subjected to thyroidectomy alone (-24 per cent of the normal).

Alkaline extracts of the anterior lobe of the hypophysis produced hyperthyroidism and strongly increased the basal metabolism. In the absence of the thyroid gland an increase in the specific dynamic action was wanting altogether or else only slight.

In twenty hypophysectomized dogs the specific dynamic action was found normal. In dogs lacking both a hypophysis and thyroid the specific dynamic action was lower than in control animals.

The hypophysis has an indirect tonic action on metabolism through its influence in developing and maintaining the thyroid gland. In the cases of thyroidectomized dogs hypophysectomy does not produce a further decrease in the basal metabolism. From this fact it is evident that the hypophysis has no action of its own on the basal metabolism.

The results of the experiments reviewed are summarized in five tables, and the article is followed by a bibliography.

J. EDWIN KIRKPATRICK, M.D.

Albright, F., Aub, J. C., and Bauer W.: Hyperparathyroidism. *J Am Med Ass* 1934 cl, 176.

The authors report on seventeen cases of proved hyperparathyroidism in which special attention was paid to the pathology, clinical types of the disease, symptoms, and differential diagnosis. In three of the

cases the hyperparathyroidism was due apparently to a generalized hyperplasia of all of the parathyroid tissue, whereas in the others it was due to a functioning adenoma. In every case there was evidence of increased production of parathyroid hormone, such as an increase in the serum calcium, a decrease in the serum phosphorus and an increase in the excretion of both elements in the urine. The removal of calcium from the bones was evidenced histologically by an increase in the number of osteoclasts and the amount of fibrous tissue. The osteoclasts proliferate in certain areas to such a degree that they form tumors of a type called by the authors 'osteoclastomata'.

The cysts are believed to develop as the result of the formation clefts in the fibrous tissue. In twenty three of a series of eighty three cases of hyperparathyroidism the increased excretion of calcium and phosphorus in the urine led to the deposit of calcium phosphate stones usually in the collecting tubules. One of the patients presented a severe anemia which was thought to be due to a decrease in hematopoietic elements resulting from replacement of the marrow by fibrous tissue. In no case were the teeth demineralized, a fact cited as evidence against their being a reserve supply of calcium.

Six clinical types of the disease are described.

1. The classical hyperparathyroidism (von Recklinghausen's disease) in which skeletal changes consisting of decalcification and the formation of cysts and tumors predominate.

2. The osteoporotic form of hyperparathyroidism in which there is a generalized decalcification without the formation of cysts or tumors.

3. Hyperparathyroidism with nephrolithiasis in which skeletal changes may or may not occur.

4. Hyperparathyroidism with renal insufficiency (nephrocalcinosis) in which kidney insufficiency due to the excessive excretion of calcium may exist without skeletal changes.

5. Acute parathyroid poisoning, in which sudden death may occur as the result of the excessive formation of the parathyroid hormone.

6. Hyperparathyroidism with skeletal changes resembling those of Paget's disease. In the great

majority of cases of this type the disease exists for many years. It produces extensive deformities, but rarely kills.

The symptoms may be classified as those due to hypercalcemia, those due to the skeletal changes, and those due to the increased excretion of calcium and phosphorus in the urine. Among the common symptoms due to hypercalcemia are hypertonism, lassitude and constipation. The symptoms due to skeletal involvement vary in severity. In some cases there are no bone symptoms, whereas in others the skeleton becomes practically destroyed. Common signs of bone involvement are bone tenderness and pain, fractures and deformities. Polyuria, polydipsia, and renal colic are to be ascribed to kidney changes. The principal changes in the skeleton revealed by X-ray examination are decreased density, deformities, cysts, tumors, and fractures. The demineralization is generalized involving all of the bones. Urinary calculi or punctate deposits of calcium in the renal parenchyma may be frequently demonstrated by X-ray examination.

The laboratory findings are quite characteristic as there are few other conditions which produce a high serum calcium together with a low serum phosphorus and an increase in the excretion of calcium and phosphorus in the urine. The phosphatase in the plasma is usually elevated, often in direct proportion to the amount of bone involvement.

The only treatment recommended for the disease is surgical excision of the parathyroid tumor if such a tumor is found. In many cases this may be exceedingly difficult. Irradiation is of no benefit.

Hyperparathyroidism must be differentiated from senile osteoporosis, Paget's disease, osteomalacia, solitary cysts, solitary benign giant-cell tumors, multiple myelomata, osteogenesis imperfecta, metastatic malignancy and basophilic adenoma of the pituitary gland. The authors believe that this is usually possible by laboratory examination or biopsy. They state that the condition is probably far more frequent than is commonly thought and that failure to make a correct diagnosis is particularly regrettable because treatment is highly successful.

LESTER R. DRAGSTEDT, M.D.

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THE ISSUE BY WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

SURGERY OF THE HEAD AND NECK

Head

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INTERNATIONAL ABSTRACT OF SURGERY

DECEMBER, 1934

COLLECTIVE REVIEW

REVIEW OF WORK ON VARICOSE VEINS FOR THE YEAR 1933

GEORGE C. MCKINSTRY M.D., ROCHESTER, NEW YORK

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Normal Physiology and Anatomy
Normal Histology of Veins
Pathologic Physiology of Varicose Veins
Diagnosis
Treatment
 (a) Solutions used
 (b) Bandage and sponge heart
 (c) Surgery
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Recurrences

INTRODUCTION

SINCE Linsler started treating varicose veins with bichloride of mercury in 1911 the injection method of treatment has steadily gained in popularity and has threatened to supplant other means of therapy. At first it was generally believed that anyone who could perform a vein puncture could treat varicose veins satisfactorily. However treatment by vein puncture without due regard for the indications and contra indications has given poor results and brought considerable disrepute to the method. The earlier reports were too enthusiastic and often published without adequate and careful analysis. The sclerosing method of treating varicose veins is of great value but we now realize that to secure the best results each case must be studied carefully

and one or all of the different means of therapy must be used in accordance with the indications in the individual case.

ETIOLOGY OF VARICOSE VEINS

There is no general agreement as to the etiological factor or factors in the production of varicose veins. The hereditary theory, the mechanical theory, the endocrine theory, and the infectious theory have their adherents. Ramel (44) discusses these theories in detail and cites the experimental work for and against them without reaching definite conclusions. In the course of time one sees cases that may support each of the theories mentioned. Most investigators believe that a hereditary tendency supplemented by pressure is the most frequent cause of varicose veins.

NORMAL PHYSIOLOGY AND ANATOMY

Normally the blood in the superficial veins of the lower extremities is collected by the external saphenous vein which empties into the popliteal and the internal or greater saphenous vein which empties into the femoral at Scarpa's triangle. In addition there are numerous communicating veins which allow the blood to flow from the superficial to the deep system of veins but not in the reverse direction. The veins are also equipped with a varying number of valves that allow the blood to go toward the heart but not away from the heart. The flow of blood in the veins is maintained by the negative pressure in the thorax, the pumping action exerted by the alternate

contraction and relaxation of the muscles of the extremity and, to a lesser extent, the pressure from the capillary bed.

NORMAL HISTOLOGY OF VEINS

Histologically, the veins show 3 coats. The internal or intima consists of lining endothelial cells and a thin elastic membrane. The middle coat or media, of an inner longitudinal muscular coat and an outer heavier circular muscular layer loosely bound together by elastic tissue and the outer coat, of fibro-elastic tissue, the nutrient vessels to the vein, and numerous nerves.

PATHOLOGICAL PHYSIOLOGY OF VARICOSE VEINS

In the formation of varicose veins there is a change in all the coats. The collagenous tissue of the intima proliferates and invades the muscular and elastic tissues. Calcium is deposited and round cells are found around the nutrient veins. In other words, a type of degeneration, the cause of which has not been determined, takes place. The veins lose their elasticity, the valves become incompetent, and the pressure in the veins increases. A vicious cycle occurs. The alteration in the vein and the increased pressure allow the blood to escape into the tissues. Edema, loss of tone, pigmentation, poor nutrition, inflammation, dry scaly skin, and ulceration may ensue.

DIAGNOSIS

The diagnosis of varicose veins is usually easy but hidden varicosities due to excessive or brawny edema may occasionally cause confusion. Information as to the competency of valves in the veins and in the communicating veins can be easily obtained by the tests of Trendelenburg or Perthes. The diagnosis of varicose ulcer may be more difficult. As Schmier (49) and others point out, syphilis, trophic disturbances, chemical irritation, trauma, infections, and diabetes are often associated with varicose veins and often two or more of these conditions may be concerned in the production of the ulcer.

TREATMENT

Solutions used. In the treatment of varicose veins by any method, the primary object is to make the circulation as nearly normal as possible. In the sclerosing treatment this is done by obliterating the vein involved. In a careful study of the mechanism of this obliteration Ochsner and Mahorner (35) found that all the vein coats are affected and that the endothelial layer must be completely destroyed if obliteration is to be permanent. There are a large number of solutions

from which to choose. A solution should have sclerosing properties sufficient to obliterate the vein permanently, should not be toxic, should not produce allergic reactions, should not cause too severe pain and should not be unstable. Up to the present no such ideal solution has been found. Tatham, Fernandez (15), Faxon (14), Dawkins (9), DeTarnowsky (12) and many others prefer quinine and urethane, whereas an equally large number of workers, among whom are Nobl and Wolf (34), Krauss (26) and Porges (42) prefer some form of sugar solution. Tournay (56), Cooper (7) and others prefer sodium morrhuate. Glycerin alone or in combination is preferred by Jausson (22), Bacharach (23), and Henninger and Winkler (21). Many solutions have been used for a time and then dropped because of some objectionable feature. Glucose produces a soft thrombus and causes moderate pain. Quinine combined with urethane does not cause pain but an occasional patient has an idiosyncrasy to it. Sodium morrhuate, a mixture of salts, is unstable and produces an occasional allergic reaction. The solution selected should be suited to the case. If a vein is large, a solution that can be used in larger volume will give better results. Smaller veins should be obliterated with a different solution. The author often uses a glucose and salt solution retrogradely at the time of ligation.

This obliterates most of the vein and is much less painful than injection at a later sitting. The smaller veins are treated later with sodium morrhuate or quinine and urethane.

Bandage and "sponge heart." In uncomplicated cases of varicose veins without edema simple injection is all that is necessary. The use of bandages is often helpful and whenever there is excessive edema or ulceration it is necessary. Bacharach has reported that 80 per cent of ulcer cases healed with the use of bandages alone while only 10.8 per cent healed with injections alone. Unna's paste bandages, elastic adhesive bandages, and woven bandages are those usually employed. Each type has its advocates. In our experience the type of bandage is of less importance than the method of application. The bandage must be evenly applied and the tension must be varied according to the requirements of the individual case. As pointed out by DeTarnowsky (12) and others, the combination of the "sponge heart" of Simon, Merckert, and McPheeters is helpful in cases of long-standing ulceration.

Surgery. Surgery is still a necessity in the treatment of certain types of varicose veins and their complications. Algave (1) uses surgery by choice in all cases. DeTallits (10, 11) and many

others use ligation in addition to injection in selected cases. They reserve ligation for cases with valvular incompetence above the lower third of the thigh cases of failure of the anastomotic branches when they resist injection and cases with an ascending thrombophlebitis. Jentzer (23) advocates surgery for cases of intractable edema in which partial resection of vein and sympathectomy are performed and for cases of large ulcers in which sympathectomy is done and followed by the use of Halsted Davis pinch grafts. Kahn (25) advocates incision of the ulcer and the indurated area deep enough to go entirely through the involved subcutaneous tissue. A new blood supply grows up from below healthy clean granulations form, the infection clears and the ulcer heals over.

Medical sympathectomy and glandular extracts
It has been well known for some time that the periarterial sympathectomy of Leriche is of benefit because it results in a temporary increase in the circulation to the extremities, chiefly on the side on which the operation is performed. With this fact established Dainow used acetylcholine to secure what Jentzer (23) calls a medical sympathectomy. The results reported are as good as those of surgical sympathectomy without the disadvantage of operation. Occasionally, healing of the ulcer is delayed or is prevented by hypocalcemia. This possibility must be kept in mind. Generally the use of glandular treatment has been ineffective. Suchter (53) reports the local use of parathyroid extract on crural ulcers with good results. However as this treatment has been employed by him in only 4 cases further trials are necessary for its evaluation.

TECHNIQUE OF INJECTION

There are many opinions as to the proper technique of injection. Some prefer to give the injection with the patients standing others, with the patient sitting and still others with the patient reclining. Some use a single tourniquet and others more than one. All claim good results. Carefully observed cases show that the best results are obtained by keeping the solution in contact with the intima in as concentrated a form as possible for a sufficient period of time to allow complete destruction of the endothelial layer. Large veins can be injected easily with the patient reclining. Saalfeld (48) thinks that the practice of stripping the blood out of the vein before injection is of theoretical rather than practical importance as anastomotic veins replace the few cubic centimeters of blood that can be thus removed. Small veins are more difficult

to inject unless the patient stands. The size of syringe and needle should be determined by the solution employed. A needle with a short bevel should be used always, and care should be taken to see that it lies properly in the lumen of the vein by withdrawing the plunger a little until blood flows freely into the syringe. In case of doubt the injection should not be made.

The injection treatment is usually possible but certain contra indications should be kept in mind. Among the definite contra indications are hyperthyroidism severe nephritis malignancy Raynaud's disease severe cardiac disease pulmonary tuberculosis, obstruction to the deep venous system and recent thrombophlebitis. There is a difference of opinion as to treatment during pregnancy. After using the injection method in 50 cases Ritchie (47) concluded that it relieves the symptoms and does not cause trouble. The majority of workers prefer to treat pregnant women conservatively by bandaging until after childbirth. Naujoks (33) reports that 75 per cent of all pregnant women have complicating varices in the legs, vulva, cervix uterus or adnexa. He emphasizes that obstetricians should bear this fact in mind as such varices may simulate placenta previa rupture of the uterus and postpartum hemorrhage.

COMPLICATIONS

The chief complications to be considered are ulcerations, severe thrombophlebitis, allergic reactions infection and pulmonary emboli. If care is exercised ulcerations should never result. However when large numbers of injections are made it is seldom that all are so perfect that ulcerations do not occur occasionally. Osilus (37) states that the injection of normal saline solution distilled sterile water or $\frac{1}{4}$ per cent novocain in large quantity (from 20 to 40 c cm) will often prevent ulceration. If ulceration results radical excision should be done as soon as the extent of the damage is determined as delay increases the amount of tissue that must be excised. Occasionally because of the stirring up of a latent infection the reaction is out of all proportion to the amount of solution injected. DeTakáts (10 11) and his co-workers obtained positive cultures from over 50 per cent of sections of apparently normal veins. Personally, I have never seen a serious outcome from this type of complication. There is swelling with redness and considerable discomfort for about a week. The infection then subsides, leaving a well thrombosed vein. This trouble can be obviated by injecting an initial test dose of the sclerosing material. Occasionally

there is an allergic reaction. Such a reaction occurs most frequently when quinine solutions and sodium morrhuate are employed. A carefully taken history and the injection of a test dose will prevent accidents. As a rule infection may be prevented by proper sterilization of instruments, skin, and solutions. Emboli are usually due to infection. Therefore the prevention of infections will reduce their incidence. Keeping the patient ambulatory is also a safeguard against embolism.

AFTER-CARE

Unfortunately it has been the rule for the patient and occasionally the physician to forget about varices as soon as the veins are obliterated or the ulcer is healed. Theis (55) has pointed out that the frequency of recurrences is due to the technique, the solution used, and too early discontinuance of the treatment. A certain type of varix needs only obliteration for permanent cure. In other types, the damage produced is so great that bandages must be worn for months or even permanently. With the vein obliterated the edema gone, and the leg appearing normal, patients are prone to become careless and either fail to wear their bandages or disappear from observation entirely. More care to these details will reduce the percentage of recurrence.

RECURRENCES

Reports on recurrences of varicose veins differ widely. Faxon (14) reports that of 314 cases treated with quinine and urethane and followed for an average of one and four tenths years, recurrences developed in 63 per cent. Of a group of cases similarly treated by Tatham and followed for two years, a cure was obtained in 10 per cent and improvement in 62 per cent. Of 439 patients similarly treated by DeTarnowsky and Sarma (12) 65 per cent remained free from recurrence. In cases treated by ligation and injection by DeTakats (11) the incidence of recurrence was 1 per cent. The variation in the results may be accounted for by differences in the technique and follow-up. McAusland says: "The tendency to develop varices is not cured by injection all underlying causes must be found and where possible eliminated the fundamental causes of ulceration are water logging by gravity and consequent atony, and for some months, and often permanently leg supports must be worn in order to support the circulation and assist the tissues in regaining normal tone. More attention to these details and careful combination of all means of treating varices will reduce the incidence of recurrence."

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ABSTRACTS OF CURRENT LITERATURE

SURGERY OF THE HEAD AND NECK

HEAD

LeCount E R and Hockema, J. Symmetrical Traumatic Fractures of the Cranium; Symmetrical Fragmentation. Comments on Their Mechanism. *Arch Surg* 934 xvii, 17

The authors report a study of eighty traumatic linear fractures of the cranium produced by blunt force. Almost one half of them were ring-shaped fractures about the foramen magnum, mainly in the posterior fossa or spread out to include both the posterior fossa and portions of the middle fossa and the vault. The rest were ventral ring fractures of the vertex, symmetrical fractures of the orbital roofs, dorsal transverse fractures, transverse ventral fractures, and sagittal fractures. The mechanism of each type is discussed. **ROBERT ZOLLINGER, M D**

Keegan J J and Ash, W E. Bilateral Cavernous Sinus Thrombophlebitis Without Involvement of the Ophthalmic Vein. Report of a Case. *Arch Ophth* 934, vii, 7

Cavernous sinus thrombophlebitis presents typically in the triad of ophthalmoplegia, exophthalmos, and chemosis progressing rather rapidly to death regardless of treatment. The infection usually originates in the venous zone draining into the ophthalmic vein. Infection arising in the ear or the base of the sphenoid may not involve the ophthalmic vein. This type is more likely to be of low grade and associated with a greater tendency toward the formation of a protective thrombus with resulting absence of diagnostic signs and possibly the occurrence of spontaneous cure.

In the case reported by the authors pain developed in the right temporal region three days after the extraction of a tooth in the absence of evidence of infection. Three weeks later diplopia in both eyes and ophthalmoplegia of the right eye developed without other signs. Six weeks after the onset of the pain a low grade fever began and signs of meningeal irritation appeared. Block of the right jugular vein was demonstrated. The symptoms gradually subsided and recovery seemed probable. Three months after the onset recurrent symptoms developed with delirium, increased pressure, and atypical signs of cerebral involvement on the left side. Death occurred two weeks later without characteristic signs of cavernous sinus thrombophlebitis in either eye or evidence of suppurative meningitis. At autopsy the primary focus was found to be osteomyelitis of the base of the sphenoid bone. Healed thrombophlebitis on the right side, purulent throm-

bophlebitis on the left side, and a meningeal abscess in the left temporal region were discovered.

The authors conclude that the predisposition of the patient to develop edema of the face on exposure to cold may have favored venous thrombosis in the presence of infection following the extraction of the tooth. The localizing signs associated with pain and slight fever indicated a diagnosis of cavernous sinus thrombophlebitis in spite of the absence of exophthalmos or chemosis. After the symptoms subsided, the primary focus of the right basal sphenoid osteomyelitis continued active, ultimately involving the left cavernous sinus and resulting in the meningeal abscess. The infection entered the left cavernous sinus posteriorly and was preceded by a protective reaction which prevented its forward spread into the ophthalmic veins. Pain and congestion occurred in the retinal veins, but there was no ophthalmoplegia in the left eye.

The authors state that the escape of both ophthalmic veins and of the left third, fourth, and sixth nerves is unusual. **E S PIATT, M D**

De Blas, A.: The So-Called Ecchymotic Mask" (Sulla cosiddetta "maschera ecchymotica") *Ann Med e Chir* 1934, viii, 493

The ecchymotic mask, called also Druck stauung, traumatic asphyxia, cervicofacial cyanosis, and ecchymotic infiltration of the face is described by Forgue as a curious syndrome characterized by loss of consciousness, violaceous tumefaction of the head and neck, puffiness of the eyelids, hemorrhagic injection of the conjunctiva and exophthalmos. It follows a severe crushing trauma of the thorax or of the thorax and abdomen.

De Blas reports two cases in which the pathogenesis differed and in one of which he made a cutaneous biopsy. He presents colored photographs of the patients.

He states that at autopsy in this condition the veins are found full of black liquid blood. Subdural hemorrhages are rare, but cerebral congestion is more frequent. A constant finding common to most cases of death from asphyxia, is punctiform hemorrhages in the pericardium and pleura.

The prognosis depends upon the associated lesions. When no extensive lesions in the internal organs are caused by the trauma, recovery occurs in from one to three weeks.

Of 151 patients whose cases are reviewed by the author 27 (about 18 per cent) died immediately or very soon after the trauma and 12 died later from complications.

In the treatment oxygen should be given or artificial respiration instituted as soon as possible after the injury. In one of the cases treated by Laird and Bormann life was saved only by long-continued artificial respiration. Cardiac stimulants and morphine may be of aid. The lesions due to the trauma must also be treated.

The author believes that if biopsy of the skin were done more often in suspected cases the diagnosis of ecchymotic mask would be made much more frequently. He reports the microscopic findings in his case in detail.

EUGENE T. LEBBY, M.D.

Malcolm, R. B.: Tumors of the Parotid Gland. *Surg. Clin. North Am.* 1934 xiv 837.

Malcolm discusses the embryology, anatomy and various pathological lesions of the parotid gland. He summarizes ten cases of parotid tumor in a table and reports six cases. The article has four illustrations.

Malcolm prefers a horizontal incision for pre-auricular parotid tumors.

CARL R. STRIMMER, M.D.

Migneco, A.: Melanoma of the Parotid Gland (Sul melanoma della parotide). *Arch. Ital. di Chir.* 1934 xxxvi 670.

Melanoma of the parotid gland is rare. After reviewing the literature on the condition the author reports two cases. In the first case the tumor was probably metastatic, and in the second probably primary in the parotid gland. The latter was the case of a man seventy-seven years of age who sought treatment for a tumor near the angle of the jaw which had been present for about a year. At first the neoplasm had grown gradually but recently it had increased in size rapidly. It was not grossly pigmented. It was extirpated surgically under the diagnosis of sarcoma of the parotid but after its removal both gross and microscopic examination showed it to be a melanoma. The patient died about six months later from pulmonary metastases without local recurrence or any other evidence of melanoma. The author is inclined to accept the Durante Conheim theory of the origin of lesions of this type.

EUGENE T. LEBBY, M.D.

Kappis, M.: Fracture Dislocation of the Head of the Lower Jaw (Ueber den Verrenkungsbruch des Unterkieferkopfs). *Zentralbl. f. Chir.* 1934 p. 814.

The author reports five cases of fracture dislocation of the head of the lower jaw. He is of the opinion that the attempt should be made to reduce the jaw first by dental measures. In cases of small displacements, reduction of the dislocated head can be accomplished by purely orthopedic methods. In cases of more marked displacements, reposition of the head is possible only by operation. If exploration and reduction can be accomplished without complete temporary removal of the head, this is of advantage as under such circumstances the nutrition of the head is better maintained by the connective tissue or muscular attachments to the neck.

In spite of excellent reduction and fixation of the head, it is sometimes uncertain that the head will retain its normal form and function. In two cases operated upon by the author a subsequent change in form and displacement of the head occurred, evidently as the result of insufficient nutrition. However they did cause much disturbance of the final functional result.

To approach the temporomaxillary articulation the author prefers Axhausen's modification of the Bockenhelmer incision, which is made behind the ear and through the cartilaginous auditory canal to the incision described by Schmidt, which is made in front of the ear under the lifted lobe.

L. DUBCHIL (Z)

Axhausen, G.: The Sarcoma Like Granuloma of Bone (Das sarkomartige Granulom des Knochens). *58. Tag d. deutsch. Ges. f. Chir.* Berlin, 1934.

On the basis of seven cases which he reports in detail the author draws the following conclusions.

In addition to the giant-cell tumors, there is another important type of non-specific granulation tumor of the maxilla. This second type shows none of the characteristic histological structure of the giant-cell granuloma. It consists partly of a simple granulation tissue and partly of a typical deviation of the latter manifested by an increasing and ultimately excessive proliferation of the spindle-cell and round-cell mesenchymal elements. At the sites of the most marked proliferation, which may be associated with numerous mitoses, there appears over large areas the deceiving picture of a spindle cell or round-cell sarcoma. These growths are differentiated from sarcomata not only by the clinical signs of benignity but also by the absence of spontaneous necrosis and the motley appearance of the histological picture which permits recognition of the transitions of pure granulation tissue to the sarcoma like changes. The term pseudosarcomatous granulomata or pseudosarcomata is proposed for them.

The pseudosarcomatous granuloma resembles the giant-cell sarcoma in its arrangement (peripheral and central forms) its diffuse growth with local restraint, and its extremely destructive effect on the bone. It differs from the giant-cell granuloma by its strikingly soft consistency which suggests fluctuation and its pronounced sensitivity to irradiation.

Experience indicates that the treatment of choice for sarcoma like granuloma is irradiation. Under irradiation, retrogression of the tumor occurs very rapidly. The results in the older cases justify the assumption that the cure is permanent.

A definite cure may be obtained also by resection in continuity followed by a plastic procedure. This type of treatment seems to be indicated when the maxillary bone is completely destroyed in its entire thickness.

It is to be assumed that heretofore the pseudosarcomatous granuloma was judged from its clinical symptoms to be a sarcoma. Recent findings show

that in a case of rapidly growing very soft maxillary tumor with a marked destructive effect on the bone a poor prognosis need not be assumed at once. Biopsy should be done to determine whether the neoplasm is a pseudosarcoma. The examination must include a large piece or several pieces of the tumor as the diagnosis pseudosarcomatous granuloma requires a complete study of the neoplasm. It must be borne in mind that pseudosarcomatous granuloma may occur also in bones other than the maxilla (Z)

Duncker W: Retromaxillary Phlegmons (Ueber retromaxillare Phlegmons) 1934 Kiel, Dissertation

The author first defines "phlegmon" as distinguished from parulis and abscess. He states that the infection giving rise to a retromaxillary phlegmon may be carried to the site at which the phlegmon develops from the bone from the periosteum, by way of the blood stream, through the lymph channels or by way of the tissue spaces, fascia, vessels, or nerve sheaths. Dental infections may have any of these origins. When the maxillary sinus is involved there are particularly unfavorable complications in which even the orbit may become affected. The development of a phlegmon in the pterygopalatine fossa is associated with great danger especially to the cranial contents. Among the pathogenic factors to be considered are granulomata, ulcerations occurring in cases of difficulty in the eruption of a wisdom tooth, and diseases of the maxillary sinus. A less important rôle is played by diseases of the ear, nose, and parotid gland. It must be borne in mind also that despite recognition of the necessity for absolute sterility of the instruments used for the induction of local and conduction anesthesia, cases of severe infection following the use of such instruments are still observed.

The diagnosis of retromaxillary phlegmon is not difficult. The treatment is entirely surgical—thorough exposure of the disease focus, preferably by the extra-oral route. A few days after the operation, when the first stormy symptoms have subsided, the offending tooth should be extracted. In some cases temporary resection of the zygomatic arch must be done.

The prognosis depends upon the extent of the phlegmonous process. Timely radical therapy will halt the spread of the process.

The best prophylaxis is an early attack on the disease focus in the tooth. Roentgenography filling of tooth cavities, and resection of the apex of the tooth root may prove of aid. GILKACH (Z)

BYE

Kirwan E. W. O. G.: Primary Glaucoma. A Symptom Complex of Epidemic Dropsy. *Arch Ophth* 1934 74, 1

Epidemic dropsy is a disease common in Bengal which is caused by toxins produced in diseased rice

It is characterized by edema, hypertrophy and dilatation of the heart, gastro-intestinal symptoms, and, in many cases, the development of glaucoma of the primary non-inflammatory type. The gastro-intestinal symptoms, which may be mild or severe, vary inversely with the cardiac symptoms.

The outstanding phenomenon of the glaucoma is the high tension, which is usually between 30 and 100 mm. Of the various methods generally used for the reduction of intra-ocular pressure only the Elhot operation performed with a 7-mm trephine has been found of value.

The optic atrophy is caused by the increased pressure alone. It is not due to the toxins of the disease. The author has never seen a case of this type of glaucoma in which sclerocorneal trephining was followed by opacities of the lens attributable to the operation or by the development of late infection. E. S. PLATT M.D.

Lloyd R. I.: The Scotoma of Glaucoma Simplex. *Am J Ophth* 1934, xvii 579

Before the development of the ophthalmoscope and tonometer the differential diagnosis of such conditions as glaucoma, optic nerve atrophy, retinal detachment and pigmentary degeneration of the retina was made by examination of the visual fields against a flat surface. In the period from the introduction of the perimetry by Foerster up to the revival of campimetry by Bjerrum in 1859 the use of the campimeter was abandoned by most ophthalmologists. The author traces the history of the development of the stages of glaucoma as demonstrated on visual field tests from Graefe's article in 1856 to the article by Seidel published in 1914.

Seidel described the sickle-shaped scotoma extending up and down from the blind spot which is now known as Seidel's sign and interpreted as an indication of the effect of pressure within the eye upon the retinal vessels. Seidel's report shows the close association between increased pressure at a given time and the presence of a sickle scotoma. The Seidel sign exists only in the earliest stages and soon passes into the true comet defect described by Bjerrum in 1859. This in turn develops into the nasal step of Ronne (1909) the first sign detectable with the perimeter and never entirely disappearing. In 1861 Haffmans, working with Donders in Utrecht, described what is now known as Ronne's nasal step.

Graefe emphasized the eccentric field contraction in glaucoma by his description of the peripheral defect usually running diagonally through the visual field in such a way that the upper-outer or the inner lower part is defective. Groenow observed that in glaucoma the loss of vision is a lowered point perception, the color field loss following closely the outline of the field for white, while in atrophy color perception is lost first, the field for colors being small and the field for white large.

In an examination of 100 persons with glaucoma simplex Prokach found that the loss was greater in

the upper nasal quadrant in 62, greater in the lower nasal quadrant in 20, and equal above and below the horizontal meridian in 18.

The macular area usually retains its function for a relatively long time, but there were notable exceptions. When the temporal area has shrunk to a small kidney shaped area with the blind spot at the hilus, loss of central vision may occur over night but as a rule requires a long period.

The peculiar resistance of the papillomacular bundle in the disk as it passes over the sharp edge of the cupped disk has been variously explained. By studies of cases of opaque optic nerve fibers and examination of the fundus with red free light it has been established that the papillomacular bundle occupies the central two-thirds of the temporal margin of the disk. The necessary piling up of fibers supplying the temporal periphery exposes these fibers to pressure as they bend over the margin of the cup. The Vienna school believe that the glaucoma defect is the result of pressure upon the blood vessels of the retina causing first an atrophy of the peripheral bundles, this effect being produced through the ganglion cells and nerve fiber layer of the retina.

Wessely Samojloff Wegner, and Evans, working separately, have obtained evidence indicating that the immediate effect of increased pressure is a stasis in the perivascular lymph spaces, and that the size of the blind spot varies according to the pressure changes. It is possible, therefore, that glaucoma may be the result of perivascular stasis and that the enlarged blind spot can be produced without an increase of tension by a lymph stasis. According to Behr, there are also periferibrillar spaces. The scotoma of glaucoma must be regarded as the result of simultaneous pressure and trophic damage to the nerve fibers and ganglion cells produced by the accumulation of fluid in the perivascular and periferibrillar spaces. Increased pressure within the globe must contribute to the damage. The strategic point for the combined effect of these factors is at the sharp edge of the cupped disk where the nerve fibers which supply the temporal periphery are crowded into the upper and lower sixths of the temporal half of the disk.

While the tonometer is a valuable aid, the only reliable guide in determining the progress of the disease is a study of the visual fields. In the few cases which were followed by the author over the entire course of the disease, the cupping of the disk preceded the increased tonometer reading and the appearance of the typical field defects. In the well developed case a study of the visual fields before and after the use of a miotic often aids in the prognosis.

E. S. PLATT M D

Bruner A. B.: The Operative Treatment of Cataracts *Am J Ophth.*, 1934, viii 699.

This article is a discussion of types of cataract and the methods used for the treatment of each type at the Lakeside Hospital, Cleveland

In the congenital type dissection of the anterior capsule is done and, if necessary repeated. When there is an opaque capsule and practically no soft cortex, complete dissection through the anterior and posterior capsule is done. In cases of juvenile cataract, which is usually of traumatic origin needling is performed except in the presence of increased tension. Membranous cataracts require two operations—dissection followed by extraction and excision of the tough membrane. In cases of after-cataract dissection is simple but the danger of complications must be borne in mind. In the treatment of cataracts of special types such as those associated with diabetes, electric shock, and tetany the most important factor is not the method of operation, but the patient's general condition and the local condition of the eye. The author has found that subluxated lenses are best removed with a wire loop.

The time of election for operation is when vision has ceased to be useful. When the cataract in one eye is fully developed and the cataract in the other eye is only incipient it is best to remove the fully developed cataract while the patient's general condition is good. Preliminary iridectomy is advisable.

VIRGIL WESCOTT M D

Duke-Elder Sir S. and Robertson E. B.: The Viscous-Elastic Properties of the Vitreous Body and Its Reaction to External Forces. *Brit J Ophth.*, 1934, xviii 433

The authors describe a technique which they developed to measure the vitreous body and determine its viscous-elastic properties. A small amount of vitreous was placed in a glass tube a small piece of metal immersed in it, and a magnet then applied. The application of the magnet produced movement of the metal with an immediate return to its original position. This finding apparently demonstrated that the vitreous has viscous-elastic properties similar to those of gelatin. The authors conclude that the vitreous is a gel composed of a meshwork of elastic fibers suspended in a viscous fluid.

VIRGIL WESCOTT M D

Stieren E.: Sarcoma of the Uveal Tract Following Trauma. *J Am M Ass.*, 1934, ciii, 311

The case reported was that of a man fifty-eight years of age who was struck in the left eye by the head of a nail. Nine months later he reported that vision had failed during the last six months. Examination of the eye following its enucleation disclosed a melanotic sarcoma of the choroid.

VIRGIL WESCOTT M D

Spaeth E. B.: Swelling of the Nerve Heads with Arachnoiditis and Unusual Changes in the Visual Fields. *Arch Ophth.*, 1934, xli 167

A man forty-one years of age gave a history of migraine-like headaches over a period of nineteen years. Corrected vision was 6/5 in the right eye and 6/15 in the left. Two operations had been performed for an old paralysis of the left inferior rectus

which was probably due to a birth injury. The findings of general examination were essentially negative. Later there was a swelling of the temporal portion of the right skull, followed by hemorrhages and exudation. The fields of vision showed a large defect in both nasal fields, but the left fundus was normal. At various times the Seidel sign and Bjerrum scotomata could be demonstrated. Roentgenograms suggested a tumor of the right optic nerve between the decussation and the optic foramen. Later the left papilla showed similar changes.

At operation, marked dilatation of the right, and less marked dilatation of the left internal carotid and the anterior and middle cerebral arteries was found. The vessels were adherent to the meninges and the optic chiasm. Freeing of the adhesions resulted in symptomatic relief but the prognosis is, of course, unfavorable. **SAMUEL A. DUNE, M.D.**

Enema, M. C. Ophthalmomyiasis Subretinalis
Arch Ophth 1934, 32, 80

The left eye of a three-year-old boy was enucleated because of a diagnosis of glioma or pseudoglioma. Pathological examination disclosed a subretinal inflammatory tumor containing a dipteran larva. The occurrence of parasitic larvae in the human eye has been reported principally in the Tropics, but recently cases have been recorded several European countries. Fly larvae have been found most frequently in the conjunctival sac. From there they can be removed only by the instillation of a bland oil, which acts by choking up the air passages. A case reported by Maggore proved that the larvae can penetrate the globe from the conjunctival sac. A peculiar white spot in the cornea, which could not be diagnosed, increased in size especially inward, and after a few weeks a larva was seen in the anterior chamber. **SAMUEL A. DUNE, M.D.**

EAR

Lindsay, J. R. Cholesteatoma Associated with an Isolated Perforation in Shrapnell's Membrane
Arch Otolaryng 1934, 25, 47

The author reports three cases of isolated perforation in Shrapnell's membrane which are typical of the different clinical types of the condition.

In the first case there was a history of long continued tubal involvement and repeated suppuration of the middle ear; the production of the attic cholesteatoma was secondary to the inflammatory changes, and the perforation in Shrapnell's area was apparently the sequela of a generalized suppuration of the middle ear. The theory that the cholesteatoma is secondary in such cases is confirmed by the frequency of bilateral involvement.

The second case was unusual as there was definite evidence that the cholesteatoma was primary. As an opportunity is seldom afforded to observe such cases either before or at the time the disease first appears, it is possible that primary cholesteatoma in the ear is not so rare as is supposed.

The third case reported was of the common clinical type in which there is little definite evidence regarding the cause. **JAMES C. BRAHNSWELL, M.D.**

Dandy, W. E. Ménière's Disease. Symptoms, Objective Findings, and Treatment in Forty Two Cases. *Arch Otolaryng* 1934, 22, 1

In every case of Ménière's disease there is loss of hearing on the side of the lesion. This is the outstanding objective sign. In pseudo-Ménière's disease the spells of dizziness are exactly like those of Ménière's disease, but tinnitus and deafness are absent. The author believes that pseudo-Ménière's disease may later become well-defined Ménière's disease. The symptom of onset of Ménière's disease may be dizziness, deafness, or tinnitus.

Ménière's disease may be cured by total section of the auditory nerve.

Partial section of the nerve, i.e. total division of the vestibular branch, was performed in three cases. So far the results have been identical with those of total section of the nerve but only fourteen and twelve months respectively have elapsed since the operation in the first two cases. The hearing that was preserved by the partial section has remained intact. If the condition is left untreated, progressive loss of hearing is inevitable.

The site of the lesion causing Ménière's disease is thought to be in the auditory nerve rather than in the end-organ. **JAMES C. BRAHNSWELL, M.D.**

Nager, F. R. The Importance of Roentgen Examination in Suppurations of the Apex of the Petrous Portion of the Temporal Bone (Die Bedeutung der Röntgenuntersuchungen bei den Eiterungen der Felsenbeinspitze). *Arch Radiol* 1934, 25, 475

The author reports four roentgenologically diagnosed and followed cases of inflammation of the apex of the petrous portion of the temporal bone. In two of them the roentgen findings were verified by microscopy. In the two others the focus of the inflammatory process was exposed and the site and size of the abscess cavity were ascertained by operation. Nager emphasizes the importance of repeated roentgenographic examinations as a means of watching the course of the pathological process. He states that if the symptoms are typical, the finding in the roentgenogram of progressive destruction of the apex of the bone is an indication for operative exposure of the deeply situated focus of inflammation. Such treatment often results in healing even in desperate cases. The introduction of silver catheters into the exposed apex and subsequent roentgen examination are recommended for visual control of the result of the operation.

Stewart, J. P. Tuberculoma of the Brain Associated with Ear Disease. *J Laryngol* 1934, 24, 493

The author states that if it is borne in mind that a tuberculoma is always secondary to some other

tuberculous focus a complete examination of the patient may often help in arriving at a diagnosis. The infection may spread by way of the blood stream or as in the author's case by direct extension from the primary focus. In the author's case there was no evidence of pulmonary tuberculosis, but the extension was traced from the primary focus—tuberculosis of the adenoid tissue—to the eustachian tube middle ear mastoid, and the brain tissue. In the brain, tuberculomata occur most frequently in the cerebellum.

The results of operative interference for tuberculoma of the brain have been disappointing. The general consensus of opinion seems to be that only a decompression to relieve the symptoms due to the increased intracranial pressure should be performed and extirpation of the growth should not be attempted. The prognosis is unfavorable the patients rarely living more than one year. In many cases the condition is not discovered until a terminal tuberculous meningitis has developed.

JAMES C. BRASWELL, M.D.

MOUTH

Hardy E. A.: The Dental Aspect of Cleft Palates
Proc Roy Soc Med., Lond 1934 xxvii 1303

From the dental aspect cleft palates may be classified as simple, compound, and composite. In the simple type there is no harelip and no dental irregularity whereas in the compound type the cleft palate is associated with harelip contraction of the dental arch, and irregularities of the teeth. Hardy recommends the introduction into the mouth of a hard vulcanite plate as soon as possible after birth to facilitate breast feeding and prevent spreading of the maxilla and distortion of the vault by sucking. At a later stage he closes the cleft in the soft palate by the procedure recommended by Gillies. This should be done after the temporary dentition in order that a plate may be made to elevate and push back the newly formed soft palate.

In the composite type of cleft palate the contraction of the dental arch is more marked and there is greater irregularity or loss of the anterior teeth with abnormality of occlusion due to the under-development of the maxilla. If successful closure of both the hard and the soft palate has been obtained the treatment should be orthodontic or the application of a denture to replace the missing teeth. When repair of the soft palate has been obtained but the hard palate is unrepaired, a denture must be worn to cover the gap as well as to supply the missing teeth. When the mobility of the soft palate interferes with the stability of the denture the free edge of the denture must be of soft rubber or fitted with a spring attachment. In cases with a cleft in the soft palate, obturators are necessary to aid in closing off the nasopharynx. The ideals to be aimed at are perfect closure of the hard and soft palate and perfect occlusion, speech and appearance.

THOMAS W. STEVENSON JR. M.D.

NECK

Webster J. H. D.: The Protracted Fractional X Ray Method (Coutard) in the Treatment of Cancer of the Larynx. *J Laryngol & Otol* 1934, xlix 420

The author's study of forty two cases of cancer of the larynx treated by roentgen irradiation shows that cancer of the larynx can rarely be controlled by the methods of roentgen irradiation which have so often proved successful in the treatment of cancer at other sites such as the skin uterus, and breast. All methods of mild irradiation and the so-called 'massive' dose given within a few days have ultimately been followed by recurrence except occasionally in postoperative cases in which they are used for prophylactic treatment and it is unknown whether malignant cells have been left or not.

The author recommends the Coutard method for cancer of the larynx. In this procedure high voltages (180 or 190 kv) are used with filtration by from 1.5 to 2 mm. of copper or zinc, a skin-focus distance of 50 cm. or more, two directly opposite lateral fields, and, in cases of extensive pharyngeal growths or marked adeopathy and the cases of patients with very thick neck supplementary fields on the affected side.

Each dose is protracted that is has a low minute-intensity as compared with the ordinary X ray treatment. Coutard's choice of the degree of protraction gives five doses which per minute, are from ten to twenty times weaker than the doses given by the usual methods.

The doses are highly fractionated as compared with those of other fractional methods. At least two doses are given daily except Sunday—for example one for an hour in the morning and one for half an hour in the afternoon. The doses are divided up over two three four or more weeks. The larger the area involved the longer must be the total period of treatment as the patient cannot be treated for more than three or four hours a day if undesirable general reactions are to be avoided.

An extraordinarily high total dosage is administered as compared with other systems of dosage. On the surface a total of from ten to twenty times the mild erythema dose may be given with safety.

In every case the dose must be estimated carefully beforehand and must be controlled by accurate measurement of the r units, the appearance in the pharynx and larynx of the white fibrous mucosal reaction, and the appearance on the skin of an epidermitis. The roentgenologist must be experienced in laryngoscopic examination and should examine the patient daily to determine the extent of the mucosal reaction. The skin dose given is the epidermidal dose which was first described by Regaud and Nogier in 1913. The reaction to this dose is rather alarming when first seen, but soon subsides.

The patients should not be treated as ambulatory cases. They must be kept under close supervision

since in advanced cases laryngeal edema may necessitate tracheotomy if this has not been performed previously. HOWARD A. MCKNIGHT M.D.

Clerf, L. H.: Carcinoma of the Larynx: An Analysis of Fifty Eight Cases with Treatment by Laryngofissure. *Arch Otolaryngol* 1934, xix, 653

Fifty-eight cases of squamous-cell carcinoma of the larynx removed by thyrotomy or laryngofissure are reviewed.

Clerf states that the importance of biopsy is generally admitted. Its influence on metastasis is largely theoretical. Extensive trauma at the time of direct laryngoscopy and a long interval between the removal of a specimen of tissue and surgical extirpation of the cancer may favor dissemination and should be avoided.

Ether anesthesia formerly induced by the intra-tracheal method has been supplanted by local anesthesia. The latter is supplemented by the use of morphine sulphate and scopolamine hydrobromide. Avertin anesthesia has not proved satisfactory. Cocaine is applied to the interior of the larynx if adequate anesthesia cannot be obtained by

blocking the superior laryngeal nerves. Tracheotomy with packing of the trachea above the tube as soon as the thyroid cartilage is divided is practiced in cases requiring extensive removal of tissue.

In the cases reviewed by the author there were five deaths from postoperative complications and six deaths from intercurrent diseases. In eight cases a recurrence of the cancer developed in the larynx, regional lymph nodes, or surrounding structures. Seven of the patients with recurrence died. One was treated by laryngectomy and has remained free from recurrence for more than three years. Four patients cannot be traced. Thirty-five patients, all of whom were operated on more than three years ago and eighteen of whom were operated on more than five years ago are still free from recurrence. Eight of these thirty-five had a tumor of a low grade of malignancy. Grade 1, nineteen, a tumor of the intermediate type, Grades 2 or 3, and eight, a tumor of the anaplastic type, Grade 4. Of the eighteen patients who have remained free from recurrence for more than five years, four had a tumor of the anaplastic type.

JOSEPH K. SARAT M.D.

SURGERY OF THE NERVOUS SYSTEM

BRAIN AND ITS COVERINGS CRANIAL NERVES

Vogeler K. Traumatic Epilepsy Following Gunshot Injuries of the Skull (Traumatische Epilepie nach Schaedelschussverletzungen) *Med Wdt* 1934, p. 439

The author reviews the most recently acquired knowledge regarding traumatic epilepsy following gunshot injuries of the skull. He discusses the types of cases in which epilepsy develops after such injuries and the indications and contra indications of surgical treatment. He cites especially the investigations of Foerster and Guleke, who both advocate surgical treatment of traumatic epilepsy but disapprove of bone plastics. Guleke found that the disturbances are less marked when the scar is yield ing than when it is firm. Foerster is of the same opinion regarding closure of the apertures in the bone. Therefore the danger of the frequently practiced covering of the bony defect must be recognized and the indications for the procedure determined with great care. The operative treatment regarded as best today is the removal of cicatricial adhesions. Guleke and Foerster perform this routinely. There after they proceed entirely differently. Foerster leaves the defect open and spans it with a large flap of fascia. Guleke fills the defect with fat after excising the scar and closes the skin over it. The results obtained by both are good (Z)

Hass, G. M.: Chordomata of the Cranium and Cervical Portion of the Spine. A Review of the Literature, with the Report of a Case. *Arch Neurol & Psychiat.*, 1934, xxxii, 300

Following a review of fifty six cases of chordoma which caused clinical symptoms by involving structures within the cranial vault or in the region of the cranium the cervical portion of the spine, or the nasopharynx the author reports a case of sphenoccipital chordoma which produced clinical symptoms through involvement, principally by direct pressure, of various cranial nerves and the brain stem. He states that in cases with involvement of cranial nerves the average duration of life after the onset of the first symptoms was about three years. In these cases the tumor did not respond to X ray or radium therapy and surgical intervention was usually of little value. ROBERT ZOLLINGER, M.D.

Torkildsen, A. and Pirle A. H.: The Interpretation of Ventriculograms with Special Reference to Tumors of the Temporal Lobe. *Am J Roentgenol.*, 1934, xxxii, 145

The authors have devised a special technique for the making of ventriculograms to aid in their

proper interpretation. With the patient lying on the table with his head on the plate the following exposures are made: one anteroposterior with the brow up, one lateral with the brow up, stereoscopic with the left and right sides up, one postero-anterior with the occiput up, one lateral with the occiput up, and one anteroposterior with the forehead up. One of the two anteroposterior ventriculograms is given shorter development in order to show the lighter shadows of the anterior horns. The head should be so placed that the gas fills the ventricles well where the tumor is believed to be situated.

The authors have also devised models to aid in the interpretation of the ventriculograms. The lateral ventricles are divided into six portions which are said to be recognizable in properly made anteroposterior ventriculograms.

Several common ventriculograms obtained in cases of tumor of the temporal lobe are presented. Both ventricles are displaced considerably to the opposite side. Sometimes the ipsilateral ventricle is pushed across the midline. The upper part of the third ventricle is displaced proportionately with the lateral ventricles, but the lower part remains anchored near the base of the skull by its connection with the immobile pituitary gland. Dilatation of the ventricles greater on the contralateral side, is generally present. The ventricle on the contralateral side is usually elevated higher than the ventricle on the side of the tumor. The descending horn of the same side may become markedly depressed or may contain no air at all. JOHN WILTSIE EYTON, M.D.

Russell D. S., Evans H. and Crooke, A. C.: Two Cases of Basophilic Adenoma of the Pituitary Gland. *Lancet* 1934, cxxxv, 240.

The cases reported are believed to represent pituitary basophilism although they lacked many of the characteristics of that condition. According to Cushing the syndrome includes (1) adiposity of the face and trunk, (2) hirsuties, (3) osteoporosis, (4) amenorrhea or impotence, (5) a raised blood pressure, (6) striae atrophicæ of the abdominal skin, (7) glycosuria and (8) a tendency toward erythremia.

In the first case reported by the authors, the second verified case of the condition in a male, there was obesity of a peculiar distribution associated with abdominal striae, plethora, hypertension, skin hemorrhages, and impairment of sexual function. However the obesity was transitory, the skin hemorrhages were terminal and doubtless due to nephritis, and osteoporosis with skeletal deformities, glycosuria, and hypertrichosis, were lacking.

In the second case cardiovascular hypertrophy and a moderate degree of hypertrichosis were asso-

clated with an obesity which did not show the distribution typical of the syndrome.

These two cases considered in conjunction with cases reported by others suggest that the correlation between basophilic adenoma, obesity and high blood pressure is very close. They demonstrate also that the correlation is between basophilic adenoma and high blood pressure as such and not between basophilic adenoma and chronic Bright's disease. The authors emphasize this fact because McMahon, Close and Hiss have recently reported the occurrence of the changes of malignant nephrosis in two verified cases of basophilic adenoma. In neither of the authors' cases was there any abnormal invasion of the posterior lobe by basophilic cells. The authors emphasize the relation between cardiovascular hypertrophy and basophilic adenoma, but state that the association remains obscure.

JOHN WILHELM EPPON, M.D.

Cobartzi, A. and Panico, E.: Secondary Atrophy of the Optic Nerve Due to Anthrax (Atrofia secondaria del nerv. ottico consecutiva a infezione carbonchiosa). *Falco*, Rome, 934 1b, sez. med. 290.

Two cases of secondary atrophy of the optic nerve due to anthrax are reported. In both, the original lesion was a pustule on the lower eyelid. In one case atrophy of the optic nerve with marked amblyopia (perception of light only) was accompanied by peripheral paralysis of the left side of the face, a marked diminution of sensation in the area supplied by the two upper branches of the trigeminal nerve, convulsions, an increase in the intracranial pressure and transitory dysphagia and dysphonia. In the other the atrophy of the optic nerve with amblyopia was associated only with a slight peripheral facial weakness.

The authors attribute the transitory symptoms to pressure due to edema, the permanent symptoms, including the atrophy of the optic nerve to interstitial neuritis resulting from invasion of the nerve sheaths by the anthrax bacilli and the intracranial hypertension to toxic irritation of the mechanism secreting and absorbing the cerebrospinal fluid.

D. von JOHN IMPASTATO, M.D.

Sander, P. G. H.: Two Cases of Facial Paralysis. A Frigore Cured by Decompression. *J. Laryngol. & Med.* 1934, 44, 503.

In two cases of facial paralysis, a "frigore" the author obtained good results by opening the fallopian canal and cutting the sheath of the facial nerve to effect decompression. The terms "a frigore" and "rheumatic" are applied to cases of facial paralysis for which no etiological factor can be discovered. These constitute 70 per cent of the cases. Ear disease has been found associated with facial paralysis in only 7 per cent of cases, but the author is of the opinion that it would be revealed more frequently if a thorough examination of the ears were made in every instance. Ear disease need not be

severe to cause facial paralysis. The most important causes of facial paralysis are lesions producing pressure such as congestion of the pericardium or neurilemma, hemorrhage, inflammatory exudation within or outside of the sheath, the production of fibrous tissue and hypertrophy of the bone. Sander recommends the operation he describes for all cases of facial paralysis which do not show improvement within a few days. DAVID JOHN IMPASTATO, M.D.

Gillies, Sir H.: Experiences with Fascia Lata Grafts in the Operative Treatment of Facial Paralysis. *Proc. Roy. Soc. Med. Lond.* 1934, LVIII, 1373.

Fascial grafting in facial paralysis is essentially a palliative operation. The graft acts as an internal grafted surgical splint counteracting the overaction of the opposing muscles. To obtain some mobility the loops may be attached to the frontalis or masseter muscles. Loops of fascia are passed around the facial muscles at one or more of the following points: the center of the lower lip, the corner of the mouth, the center of the upper lip, and around the palpebral fissure. Fascia is passed most conveniently with a fascia needle of the Blair type. It is considered advisable to embrace the fibers of the non-paralyzed muscle of the upper and lower lip.

If a flap of temporal muscle is detached from its origin and turned down over the zygoma, a fascial strip may be attached to it and to the strips at the corner of the mouth at a tension sufficient to keep the mouth straight when it is at rest and simulate expression when the temporal muscle is contracted. The paralyzed eyelid may be improved by cutting a flap of frontalis far forward with considerable fascia. This fascia may be split and made long enough so that a strip can be passed to the upper and lower lid to meet at the inner canthus where it is attached to the periosteum. Contracture of the frontalis muscle squeezes the two lids together.

THOMAS W. STEENBOX, JR., M.D.

Ballance, Sir C.: The Operative Treatment of Facial Palsy, with Observations on the Prepared Nerve Graft and on Facial Spasm. *Proc. Roy. Soc. Med. Lond.* 1934, LVIII, 1367.

The author reviews the experiments which lead him, in collaboration with Ducloux, to employ nerve grafts in the fallopian canal in the surgical treatment of facial paralysis. He states that when a graft of the correct length is fitted into the aqueduct no suture is required. The graft soon becomes fixed in coagulated blood and serum. To prevent adhesion to the dressings it is covered for a few days with a piece of gold leaf. The mastoid wound, which is left open, is filled with gauze wet with saline solution which is changed daily.

Recently grafts of degenerated nerve have been used in accordance with the observation of Cajal that newly formed fibers travel through the empty sheaths with extraordinary speed, deviations and retrogressions being much diminished. The proper stage of degeneration occurs in the peripheral part

of the nerve from eight to fifteen days after division. The use of such grafts has been followed by better and more rapid restoration of function.

THOMAS W. STEVENSON JR., M.D.

Ducl, A. B. Clinical Presentation of Improvement in Surgical Repair of the Facial Nerve. *Laryngoscope* 1934, xlv, 599

The author reports on fifty cases in which surgical repair of the facial nerve by autoplasmic nerve implants or decompression yielded favorable results.

The intercostal nerves are used for the autoplasmic grafts. The grafts are prepared by allowing wallerian degeneration to occur *in situ* as studies on animals have shown that this shortens the time required for recovery. The described method gives better results than other methods as it allows the return of emotional as well as of voluntary muscular function. The operation can be performed at any time following the onset of paralysis so long as the affected muscles respond to galvanic stimulation.

Decompression is performed in cases of facial palsy which show partial spontaneous recovery.

DAVID JOHN IMPASTATO M.D.

SPINAL CORD AND ITS COVERINGS

Platon E. and Sächse, H.: Chordotomy—Interruption of the Sensory Paths in the Spinal Cord—in Tabes Dorsalis (Chordotomie—Durchtrennung der Schmerzbahnen im Rückenmark—bei Tabes dorsalis). *Acta chirurg. Scand.* 1934 LXXV, 258

The authors report a case of very severe gastric crisis in a tabetic forty two years of age in which the crisis disappeared completely after chordotomy and cure was proved by a control examination made more than a year later. After the operation the patient completely recovered his working capacity and was relieved of all symptoms. The operation caused no complication whatever—no increase of the mild pre-existing ataxia of the lower limbs, no pyramidal lesion, and no persisting damage to the sphincter. However it was followed by a special sensory symptom which might be described as "hyperpathique" in the sense in which this term is used by Forster. This was present symmetrically on the soles of both feet and in certain localized areas on both sides of the chest.

It has been suggested that this phenomenon is a function of the sympathetic sensory nervous system in a centripetal direction. The extent of the hyperpathic zones was incompatible with the supposition of incomplete division of the spinothalamic bundle.

Briskman E. Results of the Pusep Treatment of Syringomyelia (Resultate der Syringomyeliebehandlung nach Pusep). *Monatsschr. Chir.* 1933 LVIII, 186

Pusep's method of splitting the central canal of the spinal cord was used by Oppel and his associates in twenty six cases with such success that the author feels impelled to recommend this method emphatically

for the treatment of syringomyelia. The laminectomy is performed in the region of the sixth or seventh cervical to the first thoracic vertebrae and the spinal cord is opened in the midline. For exact determination of the site of the cavity to be opened palpation is sometimes necessary. A simple incision without subsequent tamponade of the opening with a flap of muscle or dura is usually sufficient to establish permanent drainage for the fluid. While centralization of the operative opening is theoretically possible, it has not been observed to date. The operation presents no serious technical difficulties and may be performed with ease under local anesthesia with or without supplementary narcosis.

Of twenty four patients subjected to the operation, good results were obtained in sixteen. In several, the condition was entirely cured (period of observation, four years and six months). In seven the results were negative. The poor results are ascribed to destruction of the cord by the syringomyelia before the operation. When such destruction has occurred there is no chance of cure as regeneration of the destroyed nerve elements of the cord is impossible. In one of the cases reviewed death occurred two months after the operation from sepsis due to a previous suppurative inflammation of the elbow. In this case the operation was attempted because it seemed to offer the only chance of saving life. Attention is called to the fact that even under these circumstances improvement was noted for five days.

The author ascribes the favorable effect of the operation not only to the decompression of the spinal cord but also to the restoration and decompression of the accessory sensory nerve paths in the anterior roots which assume the function of the destroyed principal sensory nerve paths. Attention is called to the fact that in cases of so-called dry syringomyelia, in which cerebrospinal fluid is present in only a minimal amount, recovery is not so rapid as in cases with a large amount of fluid.

G. ALPHE (Z)

PERIPHERAL NERVES

Banzet, P.: Some Cases of Foreign Bodies in Nerves (Quelques cas de corps étrangers des nerfs). *Presse Méd.* Par. 1934, xlii, 1039.

The author reports four cases of small foreign bodies in peripheral nerves. He states that even a very small foreign body may be located easily and must be removed.

Three of the four cases were similar. In each a small metallic body had penetrated the median nerve at the wrist through a puncture wound. In the fourth case the palmar collateral digital nerve of the index finger was involved. All of the patients complained of burning pain and formication over a portion of the skin distribution of the nerve. The metallic bodies were localized by X-ray examination. After infiltration of the skin with novocain the involved nerve was exposed. Gentle pressure over the

nerve with an instrument produced pain in the distribution of the nerve only when the pressure was exerted immediately over the foreign body. The metal was removed through a longitudinal incision made in the nerve sheath. In one case the operation was performed about five months after the injury on account of pain radiating to the forearm and arm, and in the others soon after the injury. In every instance it was followed by immediate and complete recovery.

The author reports also a case in which the symptoms and findings were identical with those in the four other cases but only partial severance of the nerve could be discovered. In this case there was severe pain during the operation which could not be controlled by blocking of the nerve trunk with novocain. The patient was not benefited by the operation.

O W JONES, Jr. M.D.

SYMPATHETIC NERVES

Reschke K.: Lumbar Ramisection for Causalgia in an Amputation Stump of the Thigh (Lumbale Ramisection bei Kausalgie in einem Oberschenkelstumpf). *Jahrbuch deutsch Ges f Chir Berlin*, 934.

No reliable method for the relief of causalgia has yet been found. In the belief that the pains of causalgia are conducted by the vascular nerves, the author in the spring of 1932 resected the middle and lower ganglia of the cervical sympathetic trunk and sectioned the corresponding rami communicantes in the case of a patient who had been subjected to amputation of the arm above the elbow. Previously two operations had been performed on the peripheral nerves. In the last of these operations all of the nerves were aborted, injected with alcohol, and buried in the musculature. Neither of the operations on the peripheral nerves was followed by relief but the operation on the sympathetic nerve was successful. Six months later the patient was very well satisfied with the result, being free from suffering except for slight pain in the intercostohumeral.

In May 1933 in the case of a patient with causalgia in the stump of the thigh, the author sectioned the four lower lumbar rami communicantes and the sacral sympathetic nerve. The amputation was performed in a Berlin clinic because of a severe suppuration. Subsequently an operation was performed at another Berlin hospital for a neuroma of the sciatic nerve but failed to relieve the severe pain. After the operation performed on the sympathetic nerve by the author the pain ceased for a while, but in February 1934 the patient returned complaining of renewed pain. However the pain was less severe than it had been previously. Because of the recurrence in this case Reschke requested information from the Greifswald Clinic regarding the patient whom he operated upon after amputation of the arm. He was informed that that patient also was again suffering from not inconsiderable pain. He

therefore no longer believes that causalgia can be influenced by operation on the sympathetic nerves. In a case treated before the cases reported in this article, periaxillary sympathectomy failed completely. He suggests that the pain of causalgia may be more mental than physical and therefore cannot be cured by a surgical operation.

In the discussion of this report, URADEL (Berlin) reviewed very briefly his experiences with resection of the rami communicantes or the sympathetic trunk in endarteritis obliterans. He referred to the detailed description of the disease picture of endarteritis obliterans given before the German Surgical Society by Roepke two years previously. It was recognized at that time that the methods employed to treat the condition were very unsatisfactory. However Roeder offered hope by recommending, on the basis of his own experience resection of the rami communicantes of the third lumbar to the third sacral ganglion. This central interruption of the vascular nerves relieves the spasm of the vessels which causes the sometimes nearly intolerable spasmodic pains and renders the blood vessels already narrowed by the disease impermeable, thereby leading to more or less extensive gangrene.

Usadel reported the results of the operation in eight cases and presented several patients who had been subjected to it. He stated that before the operation all conservative measures recommended up to that time, such as the injection of padutin, Bier's hyperemia, and suction treatment, were tried and proved unsuccessful. The operation was always unilateral. The approach was retroperitoneal through a paramedian incision under high spinal anesthesia induced by Kirschner's method. This type of anesthesia is especially to be recommended for the described operation as it results in such ideal relaxation of the abdominal wall that the separated peritoneal sac with its contents falls well back, leaving the operative field well exposed. Moreover high spinal anesthesia has the advantage that, as the result of the massive blocking of the para sympathetic and sympathetic nerves, it at once becomes evident whether the operation contemplated will be beneficial or not. As soon as the anesthesia begins the patient should feel a sensation of warmth as far as the tips of the toes. Usadel believes that when this sensation is not felt the operation is contra indicated.

In his first cases Usadel sectioned only the rami communicantes. Later he resected the sympathetic trunk with the corresponding ganglia. In all cases the continuous, very severe cramp-like pains, which in most cases had rendered the patient a morphine addict ceased suddenly a comfortable feeling of warmth resulted, and the often very exhausted patient soon recovered. The effect on the trophic disturbance depended of course, on the extent of the irreparable anatomical changes produced by the disease. In the cases in which the operation was performed in the beginning of the disease, when gangrene was only threatening, the result was al-

ways excellent, as was evidenced by two of the patients presented by Usadel but when gangrene had already developed the result could not be foretold with certainty. Necrotic tissue is, of course, always lost, but Usadel has gained the impression that the advance of the gangrene can be stopped.

In two cases in which he was induced to remove the necrotic portions in the region of healthy tissue in the second and third week respectively after the operation there developed a phlegmon which necessitated a still higher removal. The resistance of the apparently relatively well nourished contiguous tissue was not sufficient to cope with an infection which evidently is very difficult to prevent.

In three cases removal of the necrotic tissue was delayed for some time. The demarcation must be so far advanced that the necrotic portions can be removed without causing injury of the demarcation zone. In the case of one of the patients presented by Usadel a good result was obtained in the right foot, whereas the left foot had been amputated several years previously because of the same condition. In the case of another patient presented, mummification and demarcation were still in progress. Usadel expressed the opinion that within a short time it would be possible to remove the necrotic large toe. The first operation had been performed six weeks previously. An almost identical result was obtained in the case of a patient who at the time of this report, was still in the hospital.

There was one death. On the third day after the operation, after relief of the spasms and the pains, the beginning of excellent perfusion of the diseased foot with blood and restoration of the feeling of well

being the patient suddenly developed a peculiar syndrome characterized by meteorism cyanosis of both hands and marked anxiety. The action of the heart was normal, and the blood pressure was not increased. The injection of padutin was followed by immediate improvement but the attacks recurred several times and the effect of the padutin became constantly weaker. During an attack on the fourth day the patient died. Autopsy yielded no explanation. There was no peritonitis and no retroperitoneal hematoma. Usadel suggested that possibly the manipulation of the sympathetic trunk and especially the extirpation of the third lumbar ganglion may have caused a severe irritation which extended to the rest of the sympathetic system. He summarized his conclusions as follows:

- 1 In the beginning of the disease when conservative measures fail, complete cessation of the apparent trophic disturbance and of the pain may be expected from the operation.

- 2 If gangrene has already developed an attempt to prevent its spread by sectioning the rami communicantes or resecting the sympathetic trunk is justified.

- 3 When possible removal of the necrotic parts should be delayed until spontaneous demarcation occurs in order that it may be done without injury to the demarcation zone. Too early removal leads very easily to the development of a phlegmon necessitating still higher removal.

- 4 If the operation is found to be followed by deaths attributable to irreparable injury of the entire sympathetic nervous system the procedure must be abandoned.

(Z)

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Frieh, P., and Bousquet, P.: Pulmonary Hernia Accompanying Fracture of the Sternum (Hernie pulmonaire accompagnant une fracture du sternum) *Rev de chir Par* 934, bu, 487

The case reported by the authors was that of a man who sustained a severe direct blow on the sternum. Examination revealed bilateral hemothorax, hemopericardium and a transverse fracture of the sternum at the level of the fourth interspace. Dyspnea was marked, and there was considerable subcutaneous emphysema extending from the anterior thorax to the face. While hemothorax was present there was no evidence of a fracture of the ribs. The upper fragment of the sternum was displaced downward and backward.

The treatment consisted of repeated aspiration of the pleural cavity on both sides. There was no evidence of infection of the pleural spaces in spite of the fact that the patient had a daily temperature of approximately 30 degrees C accompanied by profuse sweating. Improvement was gradual. The dyspnea and fever disappeared. The patient was discharged from the hospital at the end of six weeks.

When he returned for observation three weeks later his condition was excellent except that a large pulmonary hernia appeared between the sternal fragments when he coughed.

Exploration through a transverse incision under local anesthesia disclosed a tear in the pleura at the fourth intercostal space through which the lung had extended. The lung had become adherent in several places and even between the fragments of the sternum. After liberation of the lung the pleura and fascia were sutured, the fragments of the sternum wired and the adjacent ribs brought together with wire. Convalescence was uneventful.

The authors discuss the frequency of this lesion and the advisability of delayed operative reduction, and review the literature briefly.

NATHAN A. WOLACK, M D

Cramarossa, V.: Corpus Luteum Hormone and Experimental Hyperplasia of the Breast and Their Relation to Reclus Cystic Mastitis (Ormoni corpo luteo iperplasia sperimentale della mammella in rapporto all'etogenesi della mastite cistica di Reclus) *Riv ital di ginec* 934, vii, 93

There are rhythmical histological changes in the genital organs of animals corresponding to those of the menstrual cycle in women. The mammary gland, which is closely related to the sexual organs, also shows periodical histological changes. These changes are brought about by the two ovarian hormones, folliculin and the hormone of the corpus luteum. Folliculin causes stimulation and prolif-

eration of tissue, while the corpus luteum hormone causes congestion.

The author reports a study of the action of corpus luteum hormones on the breasts of normal and castrated female guinea pigs. Histological examination of the breasts at regular intervals showed three phases of histological change. The first phase was characterized by congestion with dilatation of the local vessels. The hyperemia was accompanied by a certain degree of local edema manifested by rarefaction of the connective tissue. The gland acini seemed to be reduced in number and size. In the second phase there was increased congestion with changes in the epithelial cells, which increased in size and became granular. The histological picture resembled that of adenomatous hyperplasia. In the third phase the interstitial connective tissue which had been hyperplastic passed into a condition of sclerosis. The glands dilated and took on a cystic appearance. In this last phase there were fields in which the histological picture looked very much like that of Reclus cystic mastitis in human beings.

Some authorities believe that Reclus cystic mastitis is neoplastic, while others believe it is inflammatory. According to a group it is a reactive process without true inflammation, characterized by hyperplasia of the connective tissue ending in sclerosis, and accompanied by hyperplasia of the parenchyma as a compensation for destroyed or degenerated parts of the organ. The marked resemblance between the lesions produced experimentally with corpus luteum extract and those of cystic mastitis suggests that the latter disease may be caused by hyperluteinemia in women who have reached the age when new ovarian follicles are not being produced and corpora lutea and interstitial cells with a lipid content persist or are increased. It is possible that there may be other factors in the pathogenesis of Reclus cystic mastitis due to changes in the other hormones which normally regulate histological changes in the breast, including folliculin, anteholoin, and the uteroplacental hormones. The author is carrying on further studies with each of these products separately in an effort to determine the pathogenesis of Reclus cystic mastitis of which there are various types ranging from simple hyperplasia to types which are obviously neoplastic and infiltrating.

ANNEX GOME MONAGHAN, M D

Gunssett, A.: The Treatment of Breast Cancer—Present Status of the Problem (Le traitement du cancer du sein—État actuel de la question) *Cy tologie*, 934, xviii, 347

Gunssett reviews the treatment of cancer of the breast on the basis of Steinfeld's classification of the stages of extension of the condition.

Stage 1. A movable tumor without axillary gland involvement.

Stage 2. Fixation of the tumor and involvement of the axillary glands.

Stage 3. Metastases in the supraclavicular glands.

Stage 4. Intrathoracic and distant metastases.

He discusses the use of surgery alone irradiation alone, and surgery preceded and followed by irradiation. His statistics for irradiation alone in operable cases are not encouraging. He therefore advocates surgery for operable cases. He states that the advantage of postoperative irradiation is debatable as the incidence of five-year cure is practically the same in cases treated by operation alone as in cases in which operation is followed by irradiation. Unfortunately however the statistics are difficult to evaluate as no definite basis for the histological estimation of malignancy has been formulated.

He emphasizes the importance of irradiating the entire lung, mediastinum, and vertebral column as well as the operative field and axilla in order to destroy all islands of cancer cells which apparently are dormant but may be awakened into action by some unknown influence to form a new nidus of growth. He condemns the massive-dose method of irradiation, but recommends fractional dosage given over a period of from twenty to thirty days and including the anterior thoracic wall, the internal mammary chain of glands, the axilla and the supraclavicular area.

Gunnelt treats inoperable cases, recurrences, and glandular metastases in the supraclavicular region with radium according to the technique of Regaud. Moulds are built to surround the area and the irradiation is carried out from multiple lines of fire. For distant metastases he uses roentgen therapy. For cutaneous metastases and recurrences he recommends electrocoagulation. He states that this may be combined with radium therapy.

The article contains several case reports and a review of statistics from the literature.

WILLIAM C. BECK, M.D.

Hinter, A. The Results of Irradiation and of the Combined Treatment of Primary Inoperable Carcinomas of the Breast and Inoperable Recurrences (Erfolge der Bestrahlung und der kombinierten Behandlung beim primären Inoperablen Mammakarzinom und beim inoperablen Rezidiv). 58 Tag. d. deutsch. Ges. f. Chir., Berlin, 1934.

From the standpoint of the surgeon the problem of carcinoma of the breast would be solved if recurrences did not develop and if a considerable percentage of the patients did not delay seeking treatment until after the condition becomes inoperable. The development of recurrences and delay of treatment seriously limit the possibility of cure by operation alone. According to the author's statistics, which are based on the material of a large clinic, 70 per cent of operable cases and about 80 per cent of all cases, including those which are inoperable, are fatal within a few years after the onset of the illness.

Today irradiation treatment greatly improves the results of operation and in many cases is followed by permanent cure. However no claim is made that it will take the place of operation. In view of the fact that modern operative treatment has a very low mortality and usually leaves a fairly good cosmetic result and in view of the fact that by operation with postoperative irradiation it is now possible to save about two-thirds of the patients, there seems to be little reason to attempt to treat the condition today exclusively by irradiation as formerly it was treated exclusively by operation. By exclusively irradiation treatment it would probably be difficult to obtain as high a percentage of permanent cures as is obtained with the combined treatment.

As the female breast with its contiguous regions constitutes a rather extensive area, the complete, thorough and repeated irradiation necessary for the destruction of a tumor of the breast produces an effect on the body as a whole which is no less severe than that produced by an operation. Moreover a thoroughly irradiated breast is also cosmetically damaged, and it must be remembered that in many cases the diseased breast is already cosmetically injured by the size of nodules, ulcerous destruction, or sclerotic shrinkage. Therefore in cases of operable tumors of the breast it is not desirable to substitute irradiation for operation. On the other hand the treatment must not be regarded as complete after the performance of an operation. It is not sufficient merely to hope that the patient operated upon will remain free from recurrence. Everything must be done to prevent recurrence. In the prevention of recurrence irradiation has been found to be of value.

From the standpoint of the surgeon, the inoperable carcinoma of the breast and the inoperable recurrence (practically all recurrences are inoperable so far as permanent cure is concerned) are best treated by irradiation. However it is essential for the surgeon to know what may be expected from irradiation—whether such treatment will be only slightly palliative or will result in appreciable improvement. It is necessary also for the surgeon to avoid losing interest in a patient after the successful performance of an operation and healing of the wound. The patient can still be helped even when the operation does not yield results lasting as long as was at first expected. The subsequent clinical course is now known much better in cases treated by operation with postoperative irradiation and those treated by irradiation for recurrence than in cases treated by operation alone. We know the fate of our patients and the sites, character, time of appearance and spread of recurrences with an accuracy never possible before. Whereas formerly with exclusively surgical treatment reliance was placed entirely on one procedure and permanent cure was obtained only when the mechanical cleavage made with the knife coincided exactly with the zone between the diseased and normal tissue throughout

its extent, it is now possible, with the biological method of irradiation, to attack the disease beyond the limits of operative procedures and also to destroy recurrences. Recognition of these facts, and especially of the requirements in inoperable cases and cases of recurrence, has led the author to advocate irradiation for about 80 per cent of all cases and postoperative irradiation for every case treated surgically.

From the large amount of material in the former Bier Clinic and the Roentgen-Radium Institute of that Clinic, Hirste cites a number of cases to show the possibilities of irradiation and the advisability of combining this treatment with operative procedures.

Twenty-six cases are reviewed. First to be discussed are cases which were treated exclusively by irradiation, operation being contra indicated either by the advanced stage of the lesion or a poor general condition. A seventy-year old woman with a tumor the size of an apple which was firmly adherent to the chest wall and with involvement of the axillary glands survived for five years. A sixty-seven-year old woman with a scirrhous carcinoma which developed after a canceroid of the nipple had been present for six years was still free from symptoms of cancer at the time of her death five years after the irradiation. A woman seventy-five years old who was treated for a degenerating nodule the size of a small fist survived for nearly eight years. In the case of a woman fifty-three years old who had an ulcerated growth the size of a man's fist primary healing was obtained and life was prolonged by at least two years. In the case of a woman sixty-eight years old who had a solid carcinoma the size of a man's head and involvement of the axillary glands, the huge tumor was practically destroyed and life was prolonged by about four years. Of special interest was the case of a woman forty-nine years old who had a second rudimentary breast near the anterior axillary fold. In the course of eight years this patient developed a tumor the size of two fists and metastases in the axilla. She died of the neoplasm three months after irradiation.

In three cases in which surgical treatment was contra indicated at first operation resulting in freedom from symptoms was performed several years later. In the first of these cases, that of a woman forty-five years of age, an ulcerated tumor the size of a man's fist was gradually reduced by numerous irradiations and three years later amputation was done to relieve pain. The patient survived for seven years and at the end of that time died of tuberculosis. In the second case that of a sixty-eight-year old woman, the patient is still free from symptoms nine years after extirpation of the primary nodule, four years after irradiation of an advanced scirrhous lesion, and one year after amputation. In the third case that of a woman sixty years old, amputation was done for a scirrhous cancer one year after irradiation and the patient is still free from symptoms at the end of five years.

Freedom from symptoms for many years has been obtained by irradiation also in cases of recurrence in the region of the scar the chest wall, and the axilla. A woman forty-three years old who was treated by irradiation for an ulcerating recurrent tumor in the scar of an amputation performed two years previously for a medullary carcinoma survived for seventeen years and died still free from symptoms of cancer. A woman sixty-one years old who was treated by amputation of the breast for a solid carcinoma and subsequently by irradiation for an ulcerating recurrence in the chest wall the size of the palm of the hand and involvement of the regional glands was still free from symptoms fourteen years later. A woman thirty-nine years old who was treated successfully by irradiation for recurrence in the scar and regional glands six years after amputation of the breast survived ten years after subsequent amputation of the other breast. A woman thirty-six years old who was treated by irradiation for a local recurrence developing six years after amputation was still alive three years later. A woman fifty-six years old who developed a recurrence in the scar of an amputation and in the axilla is still free from symptoms twenty years after irradiation of the recurrences. A fifty-year old woman who developed recurrences in both axillae six years after amputation is still free from symptoms nearly seventeen years after irradiation of the recurrences. A woman who was subjected to amputation of the breast thirty-six years ago and developed a carcinomatous lymph node between the nipple and axilla on the other side twenty-eight years later is still free from symptoms eight years after irradiation of the recurrence.

Particularly difficult to treat are recurrences in the sternum. In the case of a woman sixty-four years old who developed a sternal recurrence the size of a goose egg five years after amputation, the recurrence was destroyed by irradiation and the patient has now survived nearly three years.

In the cases of patients who were given prophylactic irradiation recurrences usually developed only outside of the irradiated area. Such metastases are most frequent in the other axilla. A woman fifty-six years old is still free from symptoms nine years after amputation of the breast and postoperative irradiation for a scirrhous cancer and subsequent irradiation for a recurrence. An analogous case was that of a woman forty-five years old who has remained free from symptoms for six years. In the case of a woman who was subjected to amputation of the breast for a scirrhous cancer in her forty-first year a recurrence which developed in the amputation region between the areas irradiated after the operation was destroyed with radium. In the case of a woman fifty-eight years old who was treated by amputation of the breast preceded and followed by irradiation a carcinomatous lymph cyst was found near the fifth thoracic vertebra five years after the operation and later a glandular metastasis developed in the supraclavicular fossa. Since irradiation of the

recurrences the patient has remained free from symptoms.

However, even with such successful treatment and prevention of local recurrences and regional metastases it is still necessary to bear in mind the possibility of distant metastases. Midway between local and regional metastases on the one hand and distant metastases on the other are metastases occurring in the pleura and lungs. A fifty-three-year-old woman who was treated by amputation of the breast and postoperative irradiation developed, four years later a metastatic nodule below the scapula on the other side and subsequently disseminated metastases in the pleura and lung of that side. In the case of a woman who died of extensive carcinomatosis of the skin, internal organs, and skeleton eight years after amputation of the breast for scirrhous carcinoma numerous metastases were found in the spleen.

Bone metastases are usually multiple. In the cases reviewed, irradiation was used to alleviate the pain. In some instances, however it was possible to give this treatment while the metastases were still limited to their primary sites in one or two of the thoracic vertebrae. A woman who developed metastases in the region of the sixth thoracic vertebra and paralysis of the legs, bladder, and rectum seven years after amputation of the breast was cured of the paralysis and rendered able to walk and to work for nearly two years by treatment by extension and five series of roentgen irradiations. A fifty-year-old woman who developed a lymph node in the axilla which had not been cleared out and showed signs of a metastasis in the twelfth thoracic vertebra eight months after amputation of the breast was still free from symptoms ten years after irradiation of the recurrences.

In conclusion the author cites the cases of two sisters. One, who was treated by both operation and irradiation for a cancer of the breast is still free from symptoms more than twenty years later. The other who developed a cancer of the breast fourteen years later than the first sister and was treated only by amputation, died three years after the operation. (Z)

Jeanzeney: Local Limits of Operability in Cancer of the Breast. Cancers Adherent to the Thorax (Des limites locales à l'opérabilité dans le cancer du sein. Cancers adhérents au thorax) *Gynécologie* 1934 xviii, 341

Carcinomatous masses attached to the thoracic wall may be divided into two groups: (1) primary cancers of the breast and (2) secondary postoperative growths.

Operation for such masses may be palliative (consisting of curettage, coagulation, or partial excision followed by radium irradiation) or radical. Three of the author's patients lived five years after palliative treatment. Jeanzeney says that radical operation should be undertaken only after a careful examination has ruled out metastases in lymph

nodes, lungs, and bones. For cases without remote metastases he advocates resection of the chest wall and pleura. One of his patients lived sixteen months after such an operation. A patient similarly treated by Delbet and Mendaro survived for eleven years and eight months. MARCH W. POOLE, M.D.

Ialder P.: A Critical Study of Sarcomata of the Breast (Essai d'étude critique des sarcomes du sein) *Gynécologie* 1934, xviii, 382

Sarcomata of the breast include a rather wide variety of neoplasms which can be differentiated and, to a certain extent, classified only on the basis of their morphological appearance. Clinically it is impossible to make a diagnosis of breast sarcoma merely on the basis of the presence of a large neoplasm which does not show lymphatic metastases and yet presents clinical signs of malignancy such as fixation and infiltration. Only histological and bacteriological study will rule out the infectious granulomata from the true tumors. For the differentiation of such benign mesenchymal growths as leiomyomata and adenofibromata, microscopic examination of the entire tumor is necessary.

Mixed tumors similar to those occurring in the parotid gland are possible but probably extremely rare in the breast. To this group belong the mesenchymal growths with islands of normal gland tissue and those associated with adenofibromata. Pure sarcomata are also found in the breast. From the morphological standpoint they may be classified as fibroblastic, lymphoblastic, angiosarcomatous, liposarcomatous, and giant-celled tumors. Pure sarcomata of the breast are very rare. Of 749 sarcomata reviewed by Schreiner and Thibaudan, they constituted only 1 per cent. They occur most frequently in women between thirty and sixty years of age. The treatment is mastectomy. Recurrences are very common. WILLIAM C. BECK, M.D.

TRACHEA, LUNGS AND PLEURA

Moore R. L. Humphreys, G. H. and Cochran, H. W.: The Effect of Sudden Occlusion of Either Primary Branch of the Pulmonary Artery on Cardiac Output and Pulmonary Expansion *J. Thoracic Surg.* 1934 iii 573

In experiments on anesthetized dogs the authors occluded the pulmonary circulation at will by means of provisional ligatures placed around the left and the right pulmonary arteries separately in order to study the effects upon the cardiac output and the changes in the tidal air functional residual air respiratory rate, minute-volume of the pulmonary ventilation and the oxygen absorption and oxygen saturation of the arterial blood.

They found that in half of the experiments the changes in the cardiac output were insignificant and in the other half they varied as much in one direction as in the other. However there was less variation after occlusion of the left branch of the pulmonary artery than after occlusion of the right

branch. In ten experiments the ratio of tidal air of the occluded lung to that of the other lung decreased but in the remaining experiments the decrease was not sufficiently great to be of significance. The changes in the amounts of air moved by the lungs were not constant. In each lung there was an immediate small decrease in the volume of air after occlusion of its artery J DAMEL WILLIAMS, M D

Adams, W E and Vorwald A J. The Treatment of Pulmonary Tuberculosis by Bronchial Occlusion. *J Thoracic Surg* 1934, III, 633

Adams and Vorwald carried out a large number of experiments upon dogs, monkeys, and goats to determine the effects of lung collapse on experimentally produced pulmonary tuberculosis. Atelectasis of the lung was brought about by occluding the bronchi by the application of silver nitrate solution through the bronchoscope. Tuberculous infection of the lungs was brought about, both before and after bronchial occlusion, by hematogenous, direct subpleural, and bronchogenic inoculation.

In the collapsed lobes the tubercles were uniformly small and the tissues were almost free from tubercle bacilli whereas in the inflated pulmonary lobes the lesions tended to be large, often confluent, caseous, and rich in acid fast bacilli. The favorable effect of collapse increased with the duration of the collapse and in some cases amounted to complete cure of the disease. This beneficial influence is attributed to several factors, viz. absolute rest of the part, a decrease in oxygen, and an increase in carbon dioxide.

The same procedure was carried out also in four hopeless clinical cases of tuberculosis with bilateral pulmonary involvement. In these, considerably more difficulty was experienced in the application of the cauterizing agent. In several cases there was temporary improvement characterized by a decrease in the daily temperature and in the discharge of sputum J DAMEL WILLIAMS, M D

Hedblom, C A., and Van Hassel W. The Surgical Treatment of Tuberculosis. *Surg Clin North Am* 1934, VI, 822

The authors report five cases of pulmonary tuberculosis illustrative of the various manifestations of the disease and the operative procedures indicated for each.

Case 1 was that of a man thirty five years of age who was treated by apical thoracoplasty for an apical cavity on the left side and a bilateral lesion.

Case 2 was that of a woman of unstated age who had tuberculous empyema on the left side complicating pneumothorax. Phrenico-sterneum followed by a three-stage thoracoplasty gave a good result.

Case 3 was that of a woman twenty-seven years of age who had a lesion on the right side. Pneumothorax and subsequent posterior thoracoplasty were unsuccessful. Later an upper stage anterolateral resection resulted in freedom from symptoms.

Case 4 was that of a man forty-eight years of age who was treated successfully by three-stage posterior

extrapleural thoracoplasty for extensive chronic fibrous tuberculosis on the right side with dextrocardia.

Case 5 was that of a woman thirty two years of age who had a lesion on the left side with broad bands of adhesions. Pneumothorax and open thoracotomy exploration were unsuccessful, but a good result was later obtained by partial posterior extrapleural thoracoplasty. CARL R. STEINKE, M D

Rosenblatt J. The Treatment of Tuberculous Empyema. *J Thoracic Surg* 1934, III, 432

Rosenblatt reports the clinical course and end-results in twenty-one cases of tuberculous empyema treated by conservative measures. In nineteen of the cases the patient was under treatment by artificial pneumothorax for active pulmonary tuberculosis, and in the two others tubercle bacilli were found in the sputum at some time during the treatment. Eleven of the patients are reported cured and ten are dead.

The method employed consisted of aspiration of the pus and its replacement with air, the amount of which was determined by the intrapleural pressure. The pressure was determined by the reaction of the lesion in the underlying lung. At the completion of the aspiration, 2 or 3 ccm of a saturated alcoholic solution of methylene blue were injected into the pleural cavity. Lewis and DeWitt have demonstrated experimentally that this solution inhibits the growth of tubercle bacilli.

In all of the reviewed cases the condition was accompanied by fever, loss of weight, and anemia. The conservative treatment relieved the toxemia, maintained the necessary lung collapse, and permitted later re-expansion with obliteration of the empyema cavity.

In some of the cases the tuberculous empyema was accompanied by a mixed pyogenic infection.

When the infection is mild, the described treatment may be effective, but when the infection is severe, more radical procedures are necessary. Injudicious drainage often results in permanent collapse of the lung and a draining sinus which requires surgery for cure. In some cases the lesion in the parenchyma of the lung may indicate surgical collapse rather than the treatment described.

WILLARD VAN HANDEL, M D

ESOPHAGUS AND MEDIASTINUM

Holzmann, M: Variations in the Intrathoracic Course of the Esophagus (Beitrag zur Kenntnis der Abweichungen des intrathorakalen Oesophagusverlaufes). *Acta radiol* 1934, VI, 443

The author states that besides the well-known and sometimes roentgenologically demonstrable influence which is exerted on the direction of the esophagus normally by the heart and blood vessels, an effect on the course of the esophagus may be produced by the main stem of the left bronchus. In the oblique view there is sometimes seen at the

level of the bronchus a bend which makes it possible to distinguish a suprabronchial and an infrabronchial direction of the esophagus. In the presence of pathological conditions in the thorax which cause the main stem of the left bronchus to become displaced backward, the bronchial bend in the esophagus may become very distinctly visible.

Attention is called also to a deviation of the esophagus that may be found in cases of disease of the aorta and is visualized most clearly in the left anterior oblique projection in which it is manifested in the form of a curve. This consists in an approach to, and parallel course with the elongated, paraventrally situated descending portion of the aorta from the arcus downward. The sagittal projection reveals a bayonet-shaped bend in the esophagus on a level with the arcus, which results in a distinct deviation of the following portion toward the left.

Fulde, E. The Anatomy and Physiology of the Lower Portion of the Esophagus (Ueber die Anatomie und Physiologie des unteren Speiseröhrenabschnittes). *Deutsche Zeitschr f Chir* 1934 cccviii, 530.

The author gives a detailed description of the anatomy of the lower portion of the esophagus. In this portion there are three physiological constrictions. The first of the three is due to the muscular sheath (superior diaphragmatic cardia) at the upper insertion of the phrenico-esophageal membrane. The second is due to the contraction of the crura of the diaphragm and the third constriction is formed by the folds of mucous membrane at the opening of the esophagus into the stomach. Fulde describes also the changes that occur in the position of these physiological constrictions during respiration. The site of the first constriction varies according to the phase of respiration. The purely physical position, in which the first constriction or the portion of the esophagus near the stomach seems sometimes to be above and sometimes below the diaphragm does not justify the use of such anatomical terms as epiphrenic position, subphrenic position, or 'hernia.'

The innervation of the esophagus is derived from various sources. Above the cardia the left and more anterior branch of the vagus is united by numerous branches to the anterior esophageal plexus. Below the cardia the left vagus forms the anterior gastric plexus. The right and more posterior vagus sends its branches to the corresponding posterior plexus. There are numerous anastomoses also between the vagi. The terminal branches of the vagi end in Auerbach's plexus. From the mesentery sympathetic fibers go to Auerbach's plexus. This plexus contains multipolar ganglia.

In summarizing the findings of studies of the innervation Stark concluded that normal closure of the cardia is the result of two opposing forces, one contracting and the other relaxing. The former occurs in the cardia itself while the latter receives its impulse from the vagus nerve or its centers in the

medulla. When the vagus is blocked the cardia remains closed even during the act of swallowing as the opening reflex does not occur and the wall of the esophagus is paralyzed.

To study the action of the nerves further Fulde carried out a series of experiments on rabbits. He found that the pressure in the pleural space is markedly increased by stimulation of the vagus and moderately increased by stimulation of the sympathetic nerve. Stimulation of both phrenic nerves causes a drop in the intrathoracic pressure. Esophageal pressure is increased by stimulation of the sympathetic nerve. After section of one or both sympathetic nerves there is generally no further increase in pressure whether the proximal or the distal stump is stimulated. Stimulation of the vagus nerve is followed by an increase in pressure. Section of the sympathetic nerve does not have much effect on the action of the vagus. Apparently the phrenic nerve has no direct effect on the esophagus. Physiologically the swallowed food opens the lumen of the upper portion of the esophagus to the external atmosphere. Therefore, in the portion of the esophagus above the first constriction it produces a positive pressure which approaches the atmospheric pressure. Below this constriction the diaphragm exerts a milking action. The action of the diaphragm lowers the pressure in the intradiaphragmatic portion of the esophagus. When the difference of pressure in the esophageal lumen reaches a certain level the circular muscle relaxes and the lumen opens. As long as the esophageal lumen is closed the intrapleural pressure cannot act on the intrathoracic portion of the esophagus. When descending food opens the lumen the esophageal wall comes under the influence of the intrathoracic suction. The latter pulls the walls of the esophagus apart with a force which is greater the greater the difference between intra-esophageal and the intrapleural pressure. When the pressure difference becomes sufficient the tonus of the muscular wall is overcome also in the region of the constriction and the constriction is opened. A third factor is the action of the phrenico-esophageal membrane. Under diaphragmatic contraction this membrane undergoes tension which is greatest in the superior diaphragmatic cardia.

The function of the first constriction is to control the food which is swallowed. Suitable substances are permitted to descend to the stomach. Mechanically and chemically harmful substances provoke a spasm of the esophagus and are not permitted to pass. For this reason the first constriction is the most common site of strictures due to the swallowing of caustics. In the resting condition this constriction is closed. As stimulation of the vagi sympathetic, and phrenic nerves always causes an increase in the pressure in the diaphragmatic portion of the esophagus, it seems evident that these three nerve pathways carry impulses which cause relaxation of the upper constrictions. This is explained by further experiments. The first constriction seems to be held closed by centrifugal stimuli which are carried by the

sympathetic and vagus nerves and control each other. The opening results from impulses arising in the pharyngeal and oesophageal mucosa or from sensory receptors in the cardiac region which send afferent sensory impulses to the central autonomous ganglion cells.

The second constriction has a motor function. The conduction of the food is considerably aided by the inspiratory milking action of the diaphragmatic crura. The spinal fibers of the phrenic nerve innervate the diaphragm and thereby provide for the motor function of the second constriction. The opening of this constriction results from cessation of the efferent impulses without the aid of dilating stimuli. It occurs at the onset of expiration.

The third constriction, the *plica cardiaca*, has a purely mechanical function. The serrated orifice with the rosette folds acts like a valve to prevent oral regurgitation of the solid, fluid, or gaseous gastric contents. It opens only when the pressure in the intradiaphragmatic portion of the oesophagus exceeds the internal gastric pressure or when it forced open by vomiting. HAWMANN (Z)

De Francesco F. Experimental Investigations on Chemical and Surgical Block of the Supra-cardial and Subdiaphragmatic Portions of the Oesophagus (*Ricerche sperimentali sul blocco chimico e chirurgico del tratto esofageo sopracardiale e sotto diaframmatico*). *Chir. chir.* 1934, 7, 558.

De Francesco reports experiments carried out on dogs to investigate the pathogenesis of gastric ulcer. At laparotomy in some of these experiments 80 per cent alcohol was injected around the cardiac end of the stomach to produce a chemical block and in others the oesophagus was incised to cut its nerve supply in order to produce a surgical block. The resulting changes were checked up roentgenologically and by necropsy and chemical tests of the secretory function of the stomach were made at various times. The findings are summarized as follows:

1. Supracardial or subdiaphragmatic block of the predominantly vagal nerves running in the serosa of the oesophagus decreased the tone and peristalsis of the walls of the oesophagus and, at first, also those of the cardia. Dilatation of the lower third of the oesophagus followed even though histological examination showed no evidence of dystrophic changes.

2. In 90 per cent of the animals an ulcer with the characteristics of a destructive ulcer was found in the fundus along the greater curvature a more or less short time after the operation.

3. The secretion of hydrochloric acid, the total acidity and the secretion, staining reaction, and chemical properties of the mucus of the stomach varied within about normal limits.

4. The mucus of the gastric mucosa had different properties in different areas as, with mucocarmine it became red and, with thionin, it became reddish violet in the fundus whereas it had a negative reaction or stained blue in the pyloric region.

5. Lesions of the mucosa produced surgically tended to undergo centralization, a fact which necessitates caution in acceptance of the theory of a trophic action of the extrinsic nervous system on the gastric mucosa especially since histological studies of serial sections showed that, in general, the reparative and regenerative functions of the tissue were not compromised.

6. The method of extension of the ulcers, which was unlike that of round ulcers in man, constituted evidence of extension of the vascular changes from the muscularis mucosae toward the serosa where the vascular intima was no longer visible and the staining properties of the musculature were much inferior to those of the vessels in the other regions.

7. The changes were probably due to blockage by interruption of the vasomotor fibers of the extrinsic nervous system of the stomach which act through the subserous centers of Openschowack.

EUGENE T. LEBBY, M.D.

Knight G. C. The Relation of the Extrinsic Nerves to the Functional Activity of the Oesophagus. *Br. J. Surg.* 1934, VII, 155.

The author made dissections of stillborn children and carried out experiments on animals to determine the exact distribution and function of the extrinsic nerves to the oesophagus and cardiac sphincter hoping thereby to obtain a rational basis for the surgical treatment of achalasia. Cats were chosen for the experiments because Arey and Tremblay have shown that the musculature of the oesophagus of the cat is similar to the musculature of the oesophagus of man. From his findings Knight draws the following conclusions:

1. There is a sympathetic innervation of the oesophagus.

2. There is a true intrinsic sphincter at the cardia.

3. Vagal stimulation causes tetanic contraction of the upper third of the oesophagus, which is composed of striated muscle. This contraction is augmented by sympathetic stimulation.

4. Vagal stimulation causes increased tone and motility of the lower third of the oesophagus, which is composed of unstriated muscle. The tone and motility are inhibited by sympathetic stimulation.

5. Bilateral vagal section, if complete, reproduces the appearance of achalasia of the cardia. Simultaneous removal of the sympathetic fibers prevents the onset of this obstruction. When the obstruction occurs it can be relieved by section of the sympathetic supply to the sphincter. This sympathetic supply of the cardiac sphincter is accessible as it passes to the sphincter along the coeliac axis and left gastric arteries. EARL O. LATIMER, M.D.

MISCELLANEOUS

Hedblom, C. A.: Diaphragmatic Hernia. *Ann. Int. Med.* 1934, VII, 750.

Diaphragmatic hernia may be present at birth may be acquired through anatomically weak areas

or may result from direct injury to the diaphragm or a sudden accidental marked increase in the intra-abdominal pressure. The number of reported cases particularly of cases of acquired diaphragmatic hernia at the oesophageal hiatus and incident to wounds and automobile injuries, is increasing. The greatest increase is shown by the small so-called reducible hiatus hernia demonstrable only by a special technique of roentgen examination, the inclusion of which among diaphragmatic hernia is challenged by many. The cause of the congenital type of diaphragmatic hernia is not known definitely. That of the acquired type is chiefly increased intra-abdominal pressure in the presence of congenital weakness of the diaphragm or an acquired weakness due to atrophy of muscle and absorption of the fat deposit in the anatomical foramina.

The symptoms of diaphragmatic hernia are referable to the thorax or abdomen or both in varying proportions. The thoracic symptoms are due largely to interference with the functions of respiration or circulation or both. Abdominal symptoms are largely attributable to a greater or less degree of obstruction of the stomach or intestines. The

physical findings are chiefly thoracic and due to the presence of the herniated viscera. Borborygmi, partial dextrocardia and variable physical findings occurring especially with changes in position are particularly significant. The diagnosis is confirmed by the demonstration of an abdominal viscus above the diaphragm. A gas filled viscus may be recognizable and, except in cases of hiatus hernia, a viscus containing contrast medium is unmistakable. Failure to demonstrate a hernia does not exclude it.

Small reducible symptomless hernia at the oesophageal hiatus should be treated expectantly. The treatment of all other types is surgical repair unless there are contra indications outweighing the indications in the individual case.

The most serious complication is intestinal obstruction. In the presence of this complication the operative mortality is more than doubled. In fifty-seven cases operated upon during the last three years there were eight deaths, a mortality of 14 per cent. In the author's series of twenty-two cases there were two operative deaths, one from infection and the other that of a puny child four and a half years old from shock. WALTER H. NADLER, M.D.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Grieco, F. Experimental Researches on the Prevention of Postoperative Adhesions (*Ricerche sperimentali sulla prevenzione delle aderenze peritoneali postoperatorie*) *Ann Ital di chir* 1934, xxi, 210

The peritoneum measures about 1,700 sq cm. Its most important function, that of protection, is manifested most clearly in the presence of a fibrinous or purulent inflammation caused by bacteria, chemicals, or trauma. The exudates formed predispose to the formation of adhesions, but the latter is not constant. At times the adhesions are only temporary becoming ultimately absorbed probably by the action of proteolytic enzymes liberated from broken-down leucocytes. Persistence of adhesions becomes of extreme importance when it causes other complications within the peritoneal cavity.

Grieco gives a brief review of the literature on postoperative peritoneal adhesions and discusses the various clinical and experimental methods which have been used in the attempt to prevent their formation. Apparently the most efficient method is complete peritonealization of all denuded areas.

In repeating some of the experiments of Ochsner and Gardile to determine the value of papain in the prevention of adhesions, Grieco found that this substance was quite ineffectuous and when used in a fairly high concentration, was dangerous.

A. LOUIS ROSE, M.D.

Ferrandis, R. An Anatomopathological Study of Mesenterium Commune in the Adult and Congenital Intestinal Malposition (*Studio anatomopatologico sul mesenterium commune nell'adulto sulle di tropie intestinali congenite*) *Ann Ital di chir* 1934, xxi, 311

After reviewing the literature, Ferrandis reports, with illustrations, three cases of mesenterium commune in adults. In the first case the condition was due to failure of the median loop to rotate. In the second to distorted rotation and in the third to defective rotation of the median loop and duodenum mobile.

From an analysis of the cases reported in the literature and his own cases, Ferrandis concludes that in the displacement of the primitive caudal loop to the left and the formation of the splenic flexure in the normal site the mechanical action of elevation and lateralization of the duodenum is not a necessary factor as Vogt assumed. More important, he believes, are the elongation of the colon and the impulse given by the loops of small intestine returned to the abdomen after reduction of the transitory physiological umbilical hernia.

LA. LEE T. LEWIS, M.D.

Goldberg, S. L. and Nathanson, I. T.: Acute Mesenteric Lymphadenitis. *Am J Surg* 1934, xvi, 35

The authors review the cases of sixteen children who presented a clinical picture very similar to that of acute appendicitis, but at laparotomy were found to be suffering from an acute mesenteric lymphadenitis. In the eight cases in which a culture of the throat was made, hemolytic streptococci were isolated. The same organism was found also in one of the eight glands removed and studied. As all of the children had an infection of the upper respiratory tract, the authors suggest that the lymphadenitis may have spread by the hematogenous route from such a focus. They state that if acute appendicitis cannot be ruled out definitely, laparotomy should be performed as the risk of operation is much less than that of rupture of a suppurating appendix.

ELIZABETH M. CHASTOT, M.D.

Samuel, S. and Kenny, F. E.: Primary Sarcoma of the Great Omentum. *Am J Cancer* 1934, xvi, 793

The authors report three cases of primary sarcoma of the great omentum. In all of them the tumor definitely originated in the omentum and was examined histologically.

The first case was that of a boy sixteen years of age. The tumor had caused pain and loss of weight of several months' duration and the signs of partial intestinal obstruction. Free fluid was present in the abdominal cavity. Histological examination of neoplasm following its removal by operation showed it to be a reticular-cell sarcoma.

The second case was that of a man forty years old who had noticed the presence of abdominal tumor for two years. Laparotomy showed the most common type of these rare tumors, a diffuse growth consisting of large and nodules. The histological diagnosis was "reticular-cell sarcoma."

The third case did not come to autopsy. The patient was a woman sixty-six years of age who had been in the hospital with a history of enlargement of the abdomen for six years. Autopsy revealed a grossly thickened tumor and a marked hemorrhagic infarction. The histological diagnosis was "diffuse reticular-cell sarcoma."

The authors cite seventy tumors reported in the literature. It was made in only three. It appears that the months elapse before symptoms appear. The symptoms are usually pain, the gradual enlargement of the abdomen, and present in from 40 to 50 per cent

one third of these it is bloody. The presence of fever, cachexia, and anemia is inconstant.

Patients have been reported alive from three to seven years following removal of the primary growth, but both of those operated upon by the authors died in the postoperative period.

WILLIAM C. BECK, M.D.

GASTRO-INTESTINAL TRACT

Jackman W. A.: Localized Hypertrophic Enteritis as a Cause of Intestinal Obstruction. *Brit J Surg* 1934, xlii, 27

The author reports two cases of intestinal obstruction caused by thickening of the wall of the small intestine. The wall was greatly thickened in most of its extent. In the thickest part, where the intestinal lumen was narrowed, it measured 2 cm. The mucosa was entirely replaced by a firm hemorrhagic exudate with a roughened surface. Microscopic examination revealed simple intestinal ulceration. The author suggests calling the condition subacute hypertrophic ulcerative colitis. SAMUEL KAHN, M.D.

Linton R. R.: Enterostomy. *Am J Surg* 1934, xiv, 55

The mortality of acute intestinal obstruction is still high. According to the findings of McIver's recent investigation, the average mortality ranges from 31 to 44 per cent. The value of enterostomy in the saving of life is generally recognized. The purpose of this article is to discuss the various methods of performing enterostomy and to describe in detail a technique advocated by Richardson of the Massachusetts General Hospital, Boston.

The operation must be simple enough to be carried out on extremely sick patients without producing additional shock. It should be such that the danger of contaminating the peritoneal cavity is minimal and no leakage will occur around the drainage tube during the first twenty-four hours, after which time the tube and opening are well walled off by peritoneal fibrous adhesions. The tube must be anchored so that it will remain in place for at least a week. When there is a hole on each side of the intra-intestinal drainage tube, one of the holes will continue the drainage if the other becomes plugged by the mucosa of the bowel. The operation should be so planned that intestinal contents will not escape upon the surface of the abdomen. After the enterostomy has served its purpose, the opening should close spontaneously.

Nélaton was the first to popularize enterostomy. He reported two cases in which he fixed the intestine with interrupted sutures at both ends and at the sides of the abdominal incision and made an opening 2 cm. long into the bowel lumen between two rows of transfixing sutures. While this ingenious method promoted good drainage, it was not always followed by spontaneous closure of the artificial opening.

The first to adopt Witzel's method of gastrostomy in the performance of enterostomy was von Eisels-

berg. In von Eiselsberg's procedure from ten to twelve seromuscular stitches are placed on the anti-mesenteric border of the bowel over a No. 12 to 16 Nélaton catheter and the sutures are tied. A small opening is then made through the intestinal wall at the distal end of the tunnel in which the catheter is lying. The end of the catheter is inserted into the lumen of the intestine and the intestinal wall folded over the area with a few stitches. The intestinal segment is fixed to the abdominal wall by a row of stitches. This method does not provide safeguards against early leakage or slipping of the tube, but it represents an important advance in the development of enterostomy.

Moynihan has advocated a similar procedure with the additional feature of fixation of the catheter by a single catgut suture to the cut edge of the intestine before the tube is buried with a continuous Lembert suture.

Horsley's method of enterostomy is based on the principle of Coffey in which a valve is made of the mucosa instead of the entire intestinal wall as in the Witzel procedure. An incision is made through the serosa and muscularis down to the mucosa before the catheter is buried. While this method has certain advantages, difficulty is experienced in cutting down without cutting through the mucosa. When the bowel is distended and friable it is easily punctured.

In the Stamm method, which is simple and has many advocates, two or three successive sutures are introduced into the bowel wall to form an inverted truncated cone with a valve-like opening. The disadvantages of this procedure are the encroachment on the bowel lumen and the occasional failure of the fistula to close spontaneously after removal of the tube.

The Richardson modification of the von Eiselsberg-Witzel enterostomy is based on the principle of the Witzel gastrostomy. Under local anesthesia induced with a 1 per cent solution of novocain, an abdominal incision 7 or 8 cm. long is made through the left or right rectus muscle. Exploration is avoided unless strangulation is suspected. The presenting loop of bowel is covered with warm moist gauze. A No. 18 French catheter is prepared by slightly enlarging the hole in the end to 1 cm. and making a similar opening at a point about 1 cm. further up on the opposite side of the tube. The rounded end of the catheter is not cut off. Next a stitch of No. 00 chromic catgut is passed through the wall of the catheter about 6 cm. above the end of the apertures. The final preparation of the catheter consists in placing a hemostat on the distal end. A 15-cm. portion of the distended loop of bowel is then drawn carefully into the field and after its contents have been milked out an intestinal clamp is applied to it. After the application of a purse-string suture in the bowel wall a small transverse incision is made within the area of the suture. Next a small puncture wound is made into the intestine and the end of the catheter is inserted into the lumen.

of the bowel. The pursestring suture is then tied snugly around the catheter and the catheter buried by a continuous or interrupted Lambert suture for a distance of 6 or 7 cm. above it. The final step consists in drawing the omentum down and fixing it around the catheter by means of a ligature. The abdomen is then closed in the usual manner and the tube brought out at one end of the incision or through a separate stab wound. The added precaution of placing a single stitch through the catheter and the skin edge keeps the tube from slipping.

The author believes that an enterostomy of this type meets all requirements and is safe and efficient.

JAMES W. NORRIS, M.D.

Cunha, F. Primary Duodenitis. *Am J Surg* 1934
xv, 70

Practically all of the evidence advanced to establish primary duodenitis as a primary clinical entity has been clinical rather than pathological because, the condition is seldom fatal, there is a scarcity of evidence based on postmortem findings.

From the pathological standpoint, duodenitis is of the following four types: (1) simple inflammatory; (2) ulcerative, in which there are erosions, ulcerations, and bleeding; (3) chronic, in which there is marked cellular and connective tissue infiltration; and (4) chronic healed, characterized by hyperplasia of Brunner's glands, collections of lymphocytes, infiltration of fibrous connective tissue, and sclerosis of blood vessels.

Changes similar to those in the chronic stage occur in ulcer and have suggested a relationship between the two conditions.

Etiological factors suggested by the pathological picture are: (1) mechanical trauma from food particles; (2) hyperacidity; (3) hyperkallinit; (4) vascular disease; (5) emboli; (6) functional disturbances; (7) emotional disturbances; (8) allergic reactions; (9) stasis of chyme in the duodenum secondary to periduodenal inflammation or adhesions; (10) anatomical changes such as sharp angulations of the duodenum favoring stasis; and (11) dietary indiscretions.

French observers have claimed that stasis of chyme in the duodenum is sufficient to cause irritation with secondary inflammatory changes and is favorable to bacterial growth. In experiments on rabbits in which cultures of streptococci obtained from cases of duodenitis proved at operation were injected, hemorrhagic lesions in the duodenum resulted in 57 per cent of the animals. Of twenty-two cases of duodenitis in which sections of duodenal tissue were made, diplostreptococci were found in sections of the duodenum in seventeen.

The clinical picture of duodenitis seems to be five times more frequent in males than in females. In most cases there is epigastric pain of the burning, gnawing or hunger type which is relieved by food and alkalies and recurs within from one to three hours. All patients complain of belching and acid eructations. Nausea is rare. In some cases there is

constipation. Nervous symptoms such as headache, vertigo, fatigue, palpitation, dyspnea, and loss of emotional control are common.

The most frequent roentgen findings are: (1) irritability of the duodenal bulb manifested by very rapid and usually incomplete emptying; (2) diminution of the size of the duodenal bulb associated with hardness of its margins; and (3) spastic deformities in the bulb giving it a serrated appearance.

The roentgen findings which help to distinguish the condition from frank ulcer are: (1) absence of an ulcer niche; (2) pylorospasm with no six hour retention of barium in the stomach; (3) secondary dilatation of the descending portion of the duodenum; and (4) an inconstant irregularity as contrasted with the constant irregular observed in cases of ulcer.

The treatment indicated includes: (1) the eradication of all foci of infection; (2) dietary control with prohibition of alcohol and tobacco, the use of a smooth diet, slow eating, and eating at regular intervals; (3) the administration of antispasmodics, belladonna, papaverine, and bromides; (4) alkalization, as in the ulcer régime; (5) duodenal drainage repeated several times; and (6) lavage with very dilute solutions of silver nitrate.

ELLA M. SALAMONSON

Oelkin A. and Nisacvič, L.: Appendectomy on Hemophiliacs (Ueber Appendektomie bei Hämophilien). *Nov chir Arch* 1933 xiv, 67

The authors discuss the operative treatment of patients with hemophilia on the basis of the cases of two hemophiliacs who were subjected to appendectomy. As appendicitis occurring in hemophiliacs must be treated surgically in spite of the danger blood transfusions should be given before and after the operation. Blood transfusion is of great importance in checking the hemorrhage in such cases.

In the presence of hemophilia great difficulty is experienced in making a correct differential diagnosis between acute abdominal conditions and purpura abdominalis. There are records of cases in which severe hemorrhages into the intestinal wall and mesentery were discovered to be the cause of an acute paralytic ileus in patients brought to the operating table with a diagnosis of invagination, thrombosis of the mesenteric artery or perforation of a gastric or intestinal ulcer.

The first of the two cases reported by the author was that of a boy eighteen years old who had suffered since the age of five years from partial hemophilia, a hemorrhagic diathesis of the Werlbos type. Operation was performed early in an attack of acute appendicitis. On the first day after the operation a large hematoma began to form in the ileocecal region, and by the fourth day it filled the entire lower right quadrant of the abdomen. Bloody stools were passed. Petechial hemorrhages occurred in the shoulders, chest, neck, hard palate, conjunctiva bulbi, and visible mucous membranes. Primary healing with gradual retrogression of the hematoma

and recovery resulted in four weeks. Microscopic examination of the removed appendix disclosed an acute phlegmonous process. The assumption that the acute appendicitis developed on the basis of a primary petechial hemorrhage into the wall of the appendix seemed justified.

The second case was that of a man thirty-one years of age who had suffered from hæmophilia since childhood and was operated upon for recurrent appendicitis during the interval stage. On the fourth day after the operation a large swelling appeared in the right half of the abdomen in association with icterus and marked anemia. The pulse became almost imperceptible. When the operative wound was re-opened, a marked infiltration of blood in the abdominal wall was found. Tamponade of the abdominal cavity was followed by recovery after fifty days. G. Altrov (Z)

LIVER, GALL BLADDER, PANCREAS AND SPLEEN

Demole, M.: Delays of Filling in Cholecystography, a New Roentgenological Method of Studying Hepatobiliary Function (Les retards de remplissage en cholecystographie. Un nouveau moyen radiologique d'étude des fonctions hépato-biliaires). *Acta radiol.*, 1934, xv, 433.

The author states that except in cases of severe and massive injury of the liver, the hepatic factor is of practically no importance in cholecystography. Attempts to make a chromodiagnosis of hepatic insufficiency and a cholecystographic examination by the same procedure are not satisfactory.

The rapidity with which the gall bladder fills with the tetra iodide depends upon the integrity of the liver. Rapid cholecystography by Antonucci's method has made it easily possible to obtain evidences of delayed filling.

In pathological cases there are many grades of roentgenological response to the injection of glucose and tetra iodide which permit an exact analysis of the respective rôles of the liver and gall bladder in hepatobiliary affections.

Grandclaude, C., Delannoy, E. and Driessens, J.: Cysts of the Pancreas (Les kystes du pancréas). *Ann. d'anat. path.*, 1934, xi, 433.

The authors report a case of cystadenoma of the pancreas the size of a child's head which was attached by a pedicle to the tail of the pancreas. Excision of the tumor without drainage was followed by recovery. The fluid in the cyst contained albumin, urea, chlorides, phosphates, trypsin, lipase, and a trace of amylase. On microscopic examination the multilocular cavity was found to be lined by a flat ectodermal type of epithelium. There was moderate evidence of inflammation.

A review of the literature showed that 15 cases of pancreatic cyst were discovered in 34,500 autopsies. The condition is most common between the twenty-fifth and fiftieth years of age and slightly more

frequent in females than in males. The authors call attention to the great difference in the suggested classifications of the cysts. They state that macroscopic classifications seem to be of little value. By microscopic examination it is possible to distinguish (1) canalicular cysts (2) cystadenomata (3) cysto-epitheliomata (malignant tumors to be differentiated from solid epitheliomata which have undergone necrosis) and (4) pseudocysts.

Four theories of pathogenesis ascribe the cysts respectively to (1) retention, (2) autodigestion with necrosis, (3) inflammation, and (4) tumor formation. The authors believe that all true cysts arise from embryonal inclusions. They suggest that true cysts be classified as (1) cysts with a single cavity lined with a canalicular type of epithelium and (2) cysts with multiple cavities, with or without intracystic papillae. M. M. ZINNOBER, M.D.

Lichtenstein, L.: Papillary Cystadenocarcinoma of the Pancreas. Case Report with Notes on the Classification of Malignant Cystic Tumors of the Pancreas. *Am. J. Cancer* 1934, xxi, 542.

In the case reported by the author there was an encapsulated cystic tumor of the tail of the pancreas the size of a child's head. After an interval of about five years the tumor had, in part, undergone carcinomatous change invading the capsule and there were carcinomatous metastases in the peritoneum, omentum and liver. A complete clinical record of the case was kept over a period of six years. From the clinical data and the autopsy findings the author concludes that the tumor started as a benign cystadenoma.

Lichtenstein divides malignant cystic tumors of the pancreas into three classes: (1) the essentially solid adenocarcinomata with cysts lined by epithelial cells, (2) large epithelial cysts with carcinoma in the pancreas outside of the cyst wall, and (3) papillary cystadenocarcinoma.

The tumor in the author's case belonged to the third class, consisting of a single, large, encapsulated and perhaps loculated cyst with papillary excrescences on its wall which was not unlike neoplasms seen much more frequently in the ovary.

EARL O. LATIMER, M.D.

Kalfer, R.: So-Called Stenosis of the Splenic Vein (Zur Kenntnis der sogenannten Milzvenenstenose). *Acta chirurg. Scand.* 1934, lxxiv, 535.

The author discusses the syndrome of stenosis of the splenic vein on the basis of four cases. The typical clinical picture is characterized by a splenic tumor, gastro-intestinal hemorrhage and anemia. In relation to the hemorrhage the splenic tumor usually undergoes typical variations in size. Its histological picture is characterized chiefly by an increase of the supporting tissue. The hemorrhages are as a rule very copious and occur without warning. The anemia is of the secondary type and most marked after the occurrence of the hemorrhages.

In discussing the diagnosis the author says that in many cases presenting the typical symptomatic picture there are no signs of obstruction of the splenic vein. To date, such cases have not been satisfactorily explained.

In the cases of children splenectomy often gives a good result, whereas in the cases of adults it is associated with considerable risk and its late result is uncertain. The author discusses the indications for operation in detail. He believes that splenectomy is indicated chiefly in cases of hemorrhage endangering life and those of grave anemia with thrombopenia in which there is reason to assume that the obstruction is limited to the splenic vein and not due to a malignant or other progressive process. In such cases a definitely good result may be expected.

Rusicka, G.: The Histogenesis of the Sclerosiderotic Areas of Gamma in Splenomegalies of Diverse Origin (Sulla istogenesi delle aree sclerosiderotiche di Gamma in splenomegalie di diversa origine). *Arch Ital di chir.* 1934, XXXV, 17.

Rusicka reports histological, bacteriological, and biological investigations which he carried out on rabbits and guinea pigs, using bits of splenic parenchyma obtained during the treatment of a woman for a splenomegalopathy with suppurating echinococcal cysts. In this case the cysts were found attached to the spleen and the neighboring organs by fibrous adhesions. There was a moderate secondary polycythemia. Surgical treatment limited to evacuation of the cysts and marsupialization of the spleen was followed by cure. Gross and microscopic examination of the spleen disclosed sclerosiderotic foci identical with those described by Gamma including perivascular areas and Gamma Gandy nodules. Sclerosiderotic foci were observed also in the walls of the echinococcal cysts. Bacterioscopic examination and cultural and biological tests yielded no evidence of mycotic forms.

On the basis of the findings of his animal experiments, the author concludes that the sclerosiderotic areas are of a regressive nature. He calls attention to the significance of the iron content of tissues both under physiological and pathological conditions, and cites the importance of chemical and physicochemical phenomena which demonstrate the presence, in some elements, a special siderophilous affinity and the possibility that the precipitation of salts of iron may occur independently of biological activity. He calls attention also to the importance of functional changes in the spleen in relation to hemocytolateresis, the disintegration of hemoglobin by the reticulohistocytic system, erythrophagocytosis, and the regulation of the metabolism of iron, and to the relation of vascular and circulatory changes increasing the size of the spleen to splenomegaly and lesions occurring in the parenchyma of the spleen.

He states that besides stasis, hemorrhage, vascular lesions, necrobiotic, productive, and granulomatous processes, elastolysis, hyaline changes, and

reticular changes, the splenomegaly itself and the disturbance or inhibition of function of the reticulohistocytic system are of importance in hemocytolateresis, erythrophagocytosis, and the regulation of the metabolism of iron.

He believes that these conclusions may be applicable also to other cases. The case reported in this article showed, in addition to interference with the functional activity of the reticulohistocytic system, sclerosiderotic changes which were fixed and related to phenomena of chronic stasis caused by the pressure of the cystic mass on the root of the spleen, persistence of chronic productive changes, and necrobiotic and degenerative changes in the connective tissue, the elastic fibers, and the trabeculae as well as the splenic pulp.

EDGAR T. LEEDY, M.D.

Schlasi, B.: New Indications for Splenectomies in the Treatment of Certain Blood Disorders (Le nuove indicazioni della splenectomia nel trattamento di taluni patimenti del sangue). *Arch Ital di chir.* 1934, XXXV, 459.

After reviewing the physiology of the spleen and some of his earlier observations indicating that certain blood conditions may be secondary to circulatory disturbances in the spleen, the author reports the case of a child with a severe anemia associated with splenomegaly which he believed was secondary to thrombosis of the splenic vein. In this case the symptoms were relieved by splenectomy and roentgen irradiation.

The patient was an underdeveloped boy fifteen years of age who was brought to the clinic because of weakness, a sense of pressure in the left hypochondrium, and anemia. Physical examination disclosed a palpable thrill in the epigastrium near the xiphoid. Auscultation of this area revealed, besides the normal heart and respiratory sounds, a rumbling sound such as is heard over the femoral or aortic arteries. These findings were attributed to the passage of a large volume of blood through one or more vessels in the region of the epigastrium. The superficial abdominal circulation was normal and the liver was of normal size. The spleen measured 24 by 13 cm., and was smooth, firm and not tender. The blood Wassermann reaction was negative. The erythrocyte count was 3,800,000, the leucocyte count 4,340, and the hemoglobin 35 per cent. There was a constant and increased urobilinuria.

To explain these findings the author assumed that the basic condition was a thrombosis of the splenic vein. According to this theory the epigastric thrill was due to an anomalous circulation in the epigastric region, the splenomegaly was secondary to the passive congestion, the anemia was the result of stasis of blood in the spleen and the prolonged action of the cytolytic elements of the reticulo-endothelial cells on the erythrocytes, and the urobilinuria was the result of the increased blood destruction. Medical and dietary management failed to cause improvement.

Of the operative procedures available to relieve the symptoms, splenectomy seemed to be the pro-

cedure of choice, but on account of the firm adhesions to the diaphragm, the patient's poor general condition, and the marked enlargement of the spleen, the removal of which would entail the loss of a large quantity of blood the author decided on splenocleisis, i.e., extraperitoneal transplantation of the lower two-thirds of the spleen beneath the rectus muscle.

Following this operation the patient's general condition improved, the spleen decreased in size, and the erythrocytes increased to 4,500,000, the hemoglobin to 56 per cent, and the leucocytes to 3,100.

In order to reduce the cytolytic action of the reticulo-endothelial cells of the spleen on the erythrocytes still further, roentgen irradiation was given over the transplanted spleen. Following this treatment the blood picture improved.

When the patient was last seen, about two years after the operation, the erythrocyte count was 4,456,000, the hemoglobin 70 per cent, and the leucocyte count 4,000.

Histological studies of the splenic tissue removed for biopsy showed only passive congestion.

The author states that splenocleisis may be indicated also in cases of other types of splenomegaly

that can be benefited by splenectomy but in which removal of the spleen entails too great risk. Especially when it is followed by roentgen therapy, it is the operation of choice. It may prove of value for the treatment of hemolytic jaundice.

PETER A. ROSE, M.D.

MISCELLANEOUS

Barker, P. S., Wilson, F. N., and Collier, F. A.
Abdominal Disease Stimulating Coronary Occlusion. *Am J M Sc* 1934, clxxxviii, 219.

The authors emphasize that unless the signs and symptoms are definite the diagnosis of angina pectoris or coronary occlusion should not be made until disease in the upper part of the abdomen has been excluded as the latter may simulate the former very closely. They report in detail two cases of cholelithiasis and a case of perforated gastric ulcer in which the clinical findings were strongly suggestive of coronary occlusion and a case of cholelithiasis and coronary disease in which all of the symptoms were relieved following cholecystectomy.

HARRY W. FRANK, M.D.

GYNECOLOGY

UTERUS

Ladin, L. J., and Smigal, J. O.: A Plea for the Alexander Method of Shortening the Round Ligaments for Retroversion of the Uterus. *Am J Obst & Gynec* 934, XVIII, 306.

In most operations for retroversion of the uterus the round ligaments are shortened either subperitoneally or intraperitoneally. In the Alexander operation the shortening is accomplished extra peritoneally. This is a decided advantage. In cases requiring pelvic surgery the Alexander operation is combined with abdominal section through either a median incision with two skin incisions in the groins or through one Pfannenstiel or transverse skin incision. The authors urge that the Alexander operation be accepted as the standard operation for shortening of the round ligaments. EDWARD L. CONNELL, M.D.

Hinselmann, H.: Early Diagnosis and Elective Therapy of Carcinoma of the Cervix. The Clinical and Microscopic Early Diagnosis (Frühdiagnose und elektive Therapie des Collocarcinoms. Die klinische und mikroskopische Frühdiagnose). *Arch f Gynaek* 933, CIV, 250.

Through the use of the colposcope, two advances have been made in the early recognition of carcinoma of the cervix:

1. A better understanding of malignant and suspected malignant changes of the portio namely minute ulcers and tumors and red spots. However in the presence of such findings microscopic examination is essential for a definite diagnosis.

2. Recognition of the matrix, as Hinselmann calls all of the changes which are intermediate between the normal condition of the mucosa of the portio and carcinoma. Hinselmann states that with recognition of the matrix by means of the colposcope the diagnosis of cervical carcinoma has reached its highest possible development. Insofar as it becomes cornified, the intact atypical portio epithelium can be diagnosed with the colposcope during life as leukoplakia with an accuracy of 97 per cent. The indication is a white color. Even when the epithelium is not intact, the condition can be recognized colposcopically. A good aid in the diagnosis is the iodine test of Schiller.

The following four histological forms of leukoplakic processes of the mucosa of the portio are recognized as matrices:

1. Simple atypical cornified epithelium.
2. Simple atypical cornified epithelium with (a) external budding, and (b) extension into connective tissue.
3. Markedly atypical cornified (carcinoid) epithelium.

4. Markedly atypical cornified epithelium with (a) external budding, (b) extension into connective tissue, or (c) invasion of glands.

Matrices 1 and 2 differ from Matrices 3 and 4 in the stratification of the epithelial cells. In Matrices 1 and 2 the stratification from without inward is as follows: (1) cornification layer, (2) granular layer (stratum granulosum), (3) prickly-cell layer, (4) intermediate layer and (5) basal layer. In Matrices 3 and 4 it is: (1) cornified layer, (2) granular layer and (3) subgranular layer with markedly numerous mitoses ("germinal pad").

Hinselmann intentionally omits a nomenclature, substituting for it a signature as he wishes to avoid subjective interpretation of the morphological findings. He therefore proceeds in a purely descriptive manner. He believes that in the clinical interpretation of the four matrices the findings of investigations regarding the genetic relationships of the matrices to each other are decisive. By analogy (conclusions concerning changes in the portio drawn from carcinomatous changes in the vulva) long continued clinical observations controlled by microscopic examinations, and the process of elimination, Hinselmann has come to the conclusion that the transition to carcinoma may occur from Matrix 1 through Matrices 3 and 4 through Matrices 2 and 4 and through Matrix 3.

In the discussion of Hinselmann's report, Borst stated that carcinoma can be diagnosed histologically with certainty only when a destructive growth can be demonstrated. Mitotic and nuclear unrest (variability in the size, shape, and staining properties of nuclei) and defective development of the tumor parenchyma are suggestive but not absolutely indicative of carcinoma. Hinselmann's theory of the genetic relationships of the matrices to each other is not entirely satisfactory. It has not been definitely proved that Pre-stages 1 and 3 always lead to carcinoma, and it has not been proved certain or even probable that every carcinoma of the portio must develop through these stages. Borst characterized the four matrices as follows:

1. Moderately atypical epithelium concerning the further development of which nothing can yet be said.

2. Atypical epithelial proliferations which are, and may remain, benign and are apparently capable also of involution.

3. Suggestive of carcinoma.

4. Carcinoma.

In conclusion Borst said that the problem of the importance of leukoplakia in the development of carcinoma requires clinical experience and further extensive investigation for its solution.

H. O. KLEINE (G)

Dreier L. S., and Howes W. E. Ureteral Obstruction in Carcinoma of the Cervix. *Am J Obst & Gynec.*, 1934, xxviii, 197

The intense suffering of patients with carcinoma of the cervix late in the disease is caused in almost every case by involvement of the broad ligament with ureteral obstruction. Ultimately the ureteral obstruction becomes complete and there is secondary renal infection resulting in death from uremia.

The authors review fifty cases of this type which show that a great deal can often be accomplished when the condition is treated early. They emphasize that for the early recognition of extension to the ureter repeated cystoscopic and pyelographic examinations are of great importance in the follow-up treatment of cases of carcinoma of the cervix.

By some, the encroachment on the ureter has been attributed to fibrotic contracture of the tumor cells following X ray and radium therapy, but the condition is no more frequent now than before the use of X ray and radium irradiation. The authors have found that it is usually an active cellular proliferation and seldom the result of post irradiation fibrosis.

EDWARD L. CORNWELL, M.D.

EXTERNAL GENITALIA

Bay N. M.: A New Technique in Dealing with Superior Rectovaginal Fistulae. *J Obst & Gynec. Brit Emp.*, 1934 xli, 579

In the new technique described which the author has used successfully in two cases, the cervix is pulled up and the upper edge of the fistula separated to the peritoneum. The peritoneum is then opened and the rectum further freed. Following the introduction of gauze packs to protect the peritoneum, the rectum is freed from the vagina on its lateral and inferior aspects. After complete mobilization of the rectum, the rent in that organ is closed with two tiers of sutures, neither of which goes through the mucous membrane. The surgeon's gloves are then changed, the wound is cleansed with peric acid, and the peritoneum is closed. The vaginal flaps are closed with silkworm-gut. No drains are used.

In the after-care the bowels are kept at rest for seven days and on the eighth day castor oil is given. This is followed by the instillation into the rectum of 50 c. cm. of warm olive oil and, two hours later, a soap and water enema.

In the author's cases healing occurred without leakage and there was no postoperative rise in the temperature.

HENRY S. ACKERMAN, JR., M.D.

MISCELLANEOUS

Counselor V. S., and Craig, W. McK.: The Treatment of Dysmenorrhea by Resection of the Presacral Sympathetic Nerves: Evaluation of the End Results. *Am. J Obst & Gynec* 1934 xviii 161

The results obtained from resection of the superior hypogastric plexus in dysmenorrhea indicate that

the primary cause of the condition is dysfunction of the pelvic sympathetic nervous system. Correction of this dysfunction by resection gives permanent relief and does not interfere with normal menstruation or childbearing. When menstruation is abnormal in amount and duration it shows a marked tendency to become normal after the operation.

Cases of dysmenorrhea may be divided into two groups (1) those without any other pathological pelvic condition, and (2) those with another pelvic surgical condition which may contribute to the dysmenorrhea.

Resection of the presacral nerves is indicated in both groups, but only after non-operative measures have failed to give adequate relief. Co-existing pathological lesions should be corrected at the time of the sympathectomy.

In the discussion of this report BEHNEY said that he had performed pelvic sympathectomy in two cases in which the chief complaint was dysmenorrhea and in five in which there was an element of dysmenorrhea but the chief complaint was pelvic pain. In four of the seven cases either a unilateral or a bilateral palpable ovarian enlargement was found and in two there was retrodisplacement of the uterus. Of the five patients with pelvic pain associated with dysmenorrhea only three were relieved of the dysmenorrhea whereas all were relieved of the pelvic pain.

FRANK said that among the large number of cases of dysmenorrhea which he had seen over a period of thirty years he could recall only two in which he advised the induction of amenorrhea by X ray irradiation and that he had never performed hysterectomy or any other operation for dysmenorrhea per se. He believes that in the average case of dysmenorrhea operative treatment is not advisable.

EDWARD L. CORNWELL, M.D.

Jarkovakaya A. S. The Bordet Gengou Reaction in Gynecology (Sur la réaction de Bordet-Gengou en gynécologie). *Gynec et obst* 1934 xxxi 543

An attempt was made by the author to determine the value of the Bordet Gengou test in gynecological affections due to gonorrhea. The subjects of the test were 216 ambulant and hospitalized patients treated in the Obstetrical and Gynecological Clinic of the Medical Institute of Charkov. The experiments were carried out in the Serological Department of the Experimental Institute. The antigens employed were prepared in the Laboratory of the Venereal Institute. The antigenic titer was equal to 2 million bacteria per cubic centimeter. The dose employed ranged from 0.1 to 0.08.

In 98 cases the gonorrheal nature of the disease was beyond doubt as gonococci were found in the discharge. In 78 (71 per cent) of these the Bordet Gengou reaction was positive while in the remaining 20 it was negative.

In 4 cases of acute pelviperitonitis, in which the sample of blood was taken during the acute stage of the process, the reaction was strongly positive. It

was positive also in all cases of gonorrheal arthritis. In 52 cases of this condition in which the reaction was checked repeatedly during the course of treatment it became negative when improvement resulted two or three months after the beginning of the treatment.

Of 118 cases in which no history of gonorrhea was obtained but some of the findings suggested that condition, the reaction was positive in 46 (40 per cent) and negative in 72.

With regard to the question as to whether the Bordet-Gengou reaction is specific for gonorrhea opinions differ. There are indications that the positive reaction depends on 2 factors: (1) the presence of syphilis, and (2) specific vacuotherapy. Rubenstein claims that from 25 to 30 per cent of patients with a positive Wassermann reaction will react positively to the Bordet Gengou test, but Fischer was unable to obtain a single positive Bordet Gengou reaction in 101 cases of syphilis with a positive Wassermann reaction, and Stern and Freudenthal, who carried out both tests in 642 cases, concluded that syphilitic infection has no influence on the results of the test for gonorrhea.

With regard to the effect of the specific vaccine on the gonorrheal reaction, the author is of the opinion that specific therapy renders the Bordet Gengou reaction more positive.

The Bordet-Gengou reaction is positive both during the acute stage of gonorrhea (urethritis, cervicitis, vaginitis) and during the second stage, when the gonococci cannot be found in the secretion even after the use of all known provocative reactions. The test is of value not only because it simplifies the diagnosis, but also because it permits a study of the effectiveness of treatment. If the reaction remains positive in spite of treatment, a gonorrheal focus is present even if the patient appears clinically to be cured.

A. SCHWARTZMAN, M.D.

Harbitz, H. F. Clinical Pathogenetic, and Experimental Investigations of Endometriosis. *Acta chirurg Sc ad* 954, 1914, Supp. xix.

This 400-page monograph is divided into 3 parts. The first part is a brief review of the entire subject of endometriosis, the second the report of a study of the clinical and histological characteristics and the pathogenesis of extraperitoneal lesions, and the third, a report of experiments in the transplantation of endometrium which the author carried out on rabbits.

Harbitz reviews the history of endometriosis and discusses the chief theories regarding its pathogenesis. By some, the lesions are believed to be an outgrowth from uterine or tubal mucosa, whereas by others they are believed to have their origin in fetal remnants of the wolffian body. According to a third group they are derived from serosal epithelium or persistent cells with the properties of coelomic epithelium. A fourth group regard them as metastases occurring by lymphatic or venous channels, and a fifth group, as implantations of differentiated muel-

lerian tissue. Harbitz believes that the implantation theory of Sampson is the most tenable, especially as recent experiments in transplantation of the endometrium have proved successful.

The chief locations of endometriosis are the internal genital organs and other parts of the peritoneal cavity. The most common extraperitoneal sites are the groin, umbilicus, laparotomy scars, the lower part of the vagina and the perineum. The author cites clinical observations which support the view that endometriosis arises through the outgrowth or implantation of differentiated muellerian tissue.

Attention is called to the fact that inguinal endometriosis often occurs in combination with hernia or appears simultaneously with intraperitoneal endometriosis or endometriosis in a laparotomy scar. The occurrence of such combinations of lesions supports the theory that inguinal endometriosis arises through outgrowth or implantation.

With regard to umbilical endometriosis the author calls attention to the fact that it is not uncommon to find peritoneal pouches and crypts on the inferior aspect of the umbilicus which favor the reception and implantation of endometrial particles.

Harbitz has analyzed most reported cases of endometriosis in the abdominal wall and, including his own series, has classified them on the basis of the type of the previous operation. He is of the opinion that such lesions are fully twice as common as is generally believed. They occur most frequently in women under thirty years of age. Most of them appear below the umbilicus in the anterior abdominal wall and follow an operation on the internal female genitalia. They usually give rise to swelling, pain, and tenderness at the menstrual periods. As a rule the symptoms begin within a year after the laparotomy.

Ectopic decidua, found in certain parts of the peritoneum and on the ovary during pregnancy is apparently of no importance in the origin of endometriosis. The author believes that endometriosis in the abdominal wall always arises from differentiated adult endometrium or similar muellerian tissue. In many instances it may be explained by a direct outgrowth of endometrium from the uterus, of mucosa from the fallopian tubes, or of endometrial tissue from an intra abdominal focus of endometriosis. Such an outgrowth is quite possible after ventral fixation of the uterus in which the corpus is sutured to the abdominal wall and some of the fixation sutures pass through the uterine mucosa. The most plausible explanation for the other lesions of the abdominal wall is the implantation of particles of endometrium particularly after operations which include opening into the uterine cavity such as hysterotomy. After operations on the appendix, endometriosis usually occurs in wounds which have been drained. It probably represents an accidental implantation in the scar comparable to an implantation within the abdomen in the region of the appendix. Lesions in the lower part of the vagina and in

the perineum are observed after delivery or abortion. They undoubtedly arise from an implantation of endometrial fragments in wounds and tears.

The author's theory that endometriosis in the abdominal wall is due to an outgrowth or an implantation of differentiated adult endometrium is based on the following facts:

1. Intrapertoneal dissemination of endometrial particles from pelvic (usually ovarian) foci gives rise to new endometrial implants at more distant locations and to the clinical and pathological entity pelvic endometriosis.

2. Retrograde menstruation and the escape of endometrial fragments into the abdominal cavity have frequently been observed.

3. Endometrium has been transplanted successfully in animals.

4. In experiments on rabbits the author has transplanted endometrium successfully into the peritoneal cavity, laparotomy wounds, the abdominal wall and the intercostal muscles, free in the pleural cavities, and free in the anterior chamber of the eye. These methods produced lesions which were comparable to human endometriosis and showed the usual and expected reactions to ovarian hormones.

GEORGE H. GARDNER, M.D.

Everett, H. S.: Urological Complications Following Pelvic Irradiation. *Am J Obst & Gynec* 1934, xvii, 1.

The two chief urological complications which may follow pelvic irradiation are vesicovaginal fistula and ureteral stricture.

Of eighteen cases of such complications a vesicovaginal fistula occurred in seven and in all but one of the seven the presence of a ureteral stricture was proved. In the one exception there were symptoms of ureteral stricture, but the extent of the fistula made ureteral catheterization impossible. In the eleven other cases there were bilateral ureteral strictures, most of which were extremely dense.

The author states that in every case in which pelvic organs are to be subjected to irradiation, a thorough cystoscopic examination should be made before the irradiation to determine whether there is any carcinomatous involvement of the bladder and whether ureteral strictures and renal damage are already present. After the irradiation frequent ureteral dilatations should be done in the early months.

EDWARD L. CORNWELL, M.D.

Franceschi, E.: A Contribution on So-Called Vesico-Ureterovaginal Fistulae (Contributo allo studio delle cosiddette fistole vesico-ureterovaginali). *Arch Ital di urol*, 1934, xi, 3.

The case reported was that of a woman forty years of age who was infected by her husband, first with syphilis and then with gonorrhoea. When the patient came for treatment examination revealed a very severe gonorrhoeal infection with absolute incontinence of purulent urine, vulvovaginal erosions and ulcerations, a fistula from the anterior third of

the urethra into the vagina, a large cystocele which in the standing position, came down to the opening of the vulva, a urethrocele and polypoid tumors at the meatus of the urethra.

The patient was treated for three weeks in preparation for operation. Urinary disinfectants were given by mouth and injection and the bladder was irrigated twice a day with physiological salt solution followed by the instillation of argyrol. The concentration of the argyrol was increased gradually from 5 to 20 per cent. The vagina was washed twice a day and treated with argyrol tampons. When the patient was in condition for surgery a one stage operation was performed. A circular incision was made around the meatus and the small tumors were moved. A Pezzer catheter containing a metallic sound was introduced into the urethra and the urethra incised over it both the urethra and the neck of the bladder being opened. A part of the neck of the bladder and the upper end of the urethra had been destroyed by the infection. The fistula was excised. The urethrovaginal septum was divided into two folds or flaps to be used for plastic repair. A small thin flat knife was employed for this purpose as there was no true plane of cleavage. The defect in the neck of the bladder was repaired. The steps of this part of the operation are shown by illustrations. After the neck of the bladder had been firmly reconstructed the defects in the wall of the urethra and the anterior wall of the vagina were repaired. The cystocele was then reduced and the anterior perineum repaired. The patient made an uneventful recovery with healing by first intention.

The author emphasizes the advisability of performing such operations in one stage and the importance of preliminary treatment, the use of a Pezzer catheter with the metallic sound as a guide and opening of the urethra and bladder neck for the plastic operation.

AUDREY GOSS MORGAN, M.D.

Tomita, S.: A Comparative Study of Operative and X Ray Castrations. *Jap J Obst & Gynec*, 1934, xvii, 116.

Spontaneous mobility of the uterus is controlled by the sympathetic nervous system and hormones. Dysfunction of the endocrine glands modifies uterine irritability by affecting the sympathetic and parasympathetic fibers of the uterus. This report, which contains numerous kymographic records and photographs, deals with a comparison of the uterine contractions, blood pressure, intestinal peristalsis, sedimentation of the erythrocytes, changes in the body weight and secondary changes in the endocrine glands, especially the adrenals in castrated and normal animals. Immature and mature female rabbits were castrated by X ray irradiation or operation and the uterine response to adrenalin, pilocarpin, pituitary extract, barium chloride, and ergot was recorded by tracings.

A comparison of the two castration groups with the normal controls showed that, following castration by either X ray irradiation or operation, the

spontaneous mobility of the uterus decreased markedly within a period of five days. Regressive degenerative changes in the uterus were more prompt and extensive after operative castration. The parasympathetic nerves were temporarily hyperirritable following surgical removal of the ovaries, but later the sympathetic control dominated in both groups, an observation attributed to the influence of the pituitary gland and adrenals.

Comparison of the blood pressure readings in the two castration groups and normal controls indicated that no permanent elevation of the blood pressure was produced by the loss of ovarian function. A gradual rise in the blood pressure which occurred within from one to three months after the castration suggested a transient hyperirritability of the sympathetic system. This was evidenced also by increased response to adrenalin and extracts of the posterior lobe of the pituitary gland. The temporary nature of the change was due to dysfunction of ovarian control. Balance was restored by secondary changes in the thyroid, adrenal, and pituitary glands.

The author states that functional disturbances of the intestines are often associated with abnormal ovarian hormone action. Comparison of intestinal peristalsis in the castrated animals and normal controls by pharmacological methods led to the conclusion that the loss of the ovarian hormones caused hyperirritability of the sympathetic system because of a disturbance of the balance in the remaining units of the endocrine system. The tension of the sympathetic system which followed castration by X-ray

irradiation or operation differed in quantity but not in quality.

The rate of sedimentation of the erythrocytes was definitely increased in both castration groups at the end of the year. The author suggests that there is a definite relationship between the rate of sedimentation of the erythrocytes and the follicular hormones. He believes that the interstitial portion of the ovary and the corpus luteum do not alter the rate of the sedimentation.

The report is concluded by a comparison of the histological changes occurring in the adrenals and the ovaries and of the changes in body weight following castration. The effects of operative and X-ray castration were similar except for variations in the rapidity and degree of secondary changes. Operative castration caused more prompt changes than X-ray castration. The body weight increased temporarily after the castration, but at the end of a year was below normal standards. Transient stimulation of the ovary following X-ray castration was evidenced by proliferation of the interstitial tissue of the ovaries. Ultimate atrophy and disappearance of the follicular apparatus caused a marked diminution in the size of the glands. In the adrenals, castration was followed by marked proliferation of the cortex. In the animals castrated by operation, neutral fat and cholesterol were increased.

In conclusion the author says that endocrine activity is a function not only of mature follicles but also of static and atretic follicles.

ALICE F. MAXWELL, M.D.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Selitzky S. Nephropathy Nephrosis, and Nephritis of Pregnancy (Néphropathies, néphroses et néphrites de la grossesse) *Gynec et obst* 1934 **XXV** 325.

The author states that the clinical manifestations of renal involvement during gestation depend upon a wide variety of exogenous and endogenous factors which affect the organism as a whole and give rise to syndromes so variable that they cannot all be designated by a single term. Transitory changes of physiological norms may suggest minor pathological entities, and frankly pathological states differ in degree and cause. The author's discussion includes the causes, clinical course, treatment and immediate and ultimate prognosis of the renal affections and is based on the following classification according to clinical types

- 1 Degenerative types nephroses and nephropathies ("kidney of pregnancy")
- 2 Inflammatory types (a) nephritis and pregnancy, (b) nephritis developing during pregnancy and (c) chronic nephritis existing prior to pregnancy
- 3 Mixed types nephronephritis.

The etiology of these renal gestoses is still obscure. At the present time theories of mechanical causation are less generally accepted the trend of opinion tending to attribute the conditions to toxic factors resulting from disturbances of the metabolic and excretory functions of the fetus or mother. The fact that all organs of the body are involved to some degree lends support to the view that a circulating toxin is responsible and affects the kidneys particularly because these organs constitute a site of diminished resistance on account of the burden imposed upon them by pregnancy, previous or coincidental damage from poisons, or constitutional weaknesses.

The pathological changes and pathogenesis are equally uncertain and subject to various interpretations because of the variety of the lesions. Thus the proponents of the glomerular disease theories are in sharp variance with those who emphasize the tubular affection. Others attribute the pathological changes to vascular disease resulting from arteriospasm and another group recognize only a generalized disorder of the reticulo-endothelial system.

This divergence of opinion as to the clinical classification, etiology and pathology results in marked differences in statistical reports regarding the clinical types, incidence, prognosis and treatment. The author compares the findings in various published reports with those in 1,408 cases of late pregnancy toxemia which he collected from the University Clinic of Moscow (442 cases in sixteen and a half

years) and the Scientific Institute for the Protection of Maternity and Infancy (966 cases in six years).

In the former institution the incidence of renal gestoses was 3.6 per cent, whereas in the latter it was 10 per cent. The degenerative types (nephropathies or "kidney of pregnancy") were observed most frequently their incidence in the 2 institutions being 64 and 75 per cent respectively. Nephroses were next most common their incidence being 15.7 and 19.1 per cent. Inflammatory types (nephritis) were most rare, with an incidence of only 2.1 and 4.9 per cent whereas the mixed types (nephrosonephritis) were slightly more frequent, with an incidence of 4.8 and 10 per cent. Chronic nephritis occurred in 7.2 per cent of the cases.

The frequency of gestoses in general depended to some extent on the number of previous pregnancies and the age of the patient. It was definitely highest in young and healthy primiparae although when elderly primiparae were compared with secundiparae and multiparae the incidence in the former was 53.9 per cent and the incidence in the latter 43.1 per cent. In secundiparae the incidence was 15.7 per cent, and in tertiparae, 8.6 per cent. The higher incidence in secundiparae refutes the opinion of Zimnitsky that nephropathy never occurs in secundiparae who did not have this affection during their first pregnancies. All forms of renal gestosis are most frequent in primiparae. Nephrosis, for example, was never found in multiparae. With regard to the influence of age it was found that renal gestosis was most frequent between the twenty first and thirtieth years, its incidence at that age being 59.4 per cent in the cases at the University Clinic of Moscow and 60.5 per cent in the cases at the Scientific Institute for the Protection of Maternity and Infancy.

Other factors such as multiple pregnancies, polyhydramnios, and contracted pelvis were also investigated. In cases of multiple pregnancy the incidence was 8.1 per cent. The author believes that the importance of contracted pelvis as a predisposing factor is greatly over-estimated as his findings showed that the incidence of renal gestoses in cases of contracted pelvis was no higher than the incidence of contracted pelvis in general.

Renal gestoses appear most frequently during the second half of pregnancy although in some cases in which they developed subsequent to the toxemias of early pregnancy (hyperemesis) they were usually exceptionally severe. Of the 442 cases of renal gestoses treated at the University Clinic of Moscow 144 (32.5 per cent) developed following other toxic states, 53 during early pregnancy and 121 during late pregnancy toxemias (pre-eclampsia eclampsia).

There was considerable variation in the clinical outcome between the various types of renal involve-

ment. These are recorded in tables which show that the mortality of eclampsia (25 deaths) constituted 5.6 per cent of all deaths. The infant mortality in the various types of renal gestoses was as follows: nephropathy, 7.2 per cent; nephrosis, 36.3 per cent; nephrosonephritis, 40.3 per cent; and nephritis, 30.7 per cent. Plegmasia, abruptio placentae, placenta praevia, hemorrhages, cerebral complications, premature delivery, puerperal complications, stillbirths, and neonatal deaths were all more common in cases with albuminuria than in cases without albuminuria. In the cases of patients with nephrosis and nephritis the duration of labor was definitely longer. The prognosis was most grave in the cases with an acute onset of symptoms. The acute forms were most frequent in the grave cases of nephrosis and nephrosonephritis and were rare in the cases of nephritis. Eclampsia was a complication in 15.0 per cent of the cases of nephropathy, 54.7 per cent of those of nephrosis, and all of those of nephrosonephritis. The mortality due to eclampsia also varied according to the type of the renal gestosis. In the cases of nephropathy it was 3.9 per cent, whereas in the cases of nephrosonephritis, it was 85.7 per cent.

In the foreground of treatment the author places prophylactic measures which include careful hygienic supervision and early hospitalization when symptoms appear. The most important factor of the dietary regimen is limitation of fluids and salt. The author is of the opinion that treatment with drugs and the intravenous administration of glucose or Ringer's solution have absolutely no value. In progressive states the pregnancy must be terminated by induction of labor or in extremely acute cases, cesarean section. It is rare for the disease to recur in the same form during successive pregnancies. In the cases reviewed the acute forms and eclampsia were rare, whereas recurrence developed in 10.7 per cent of cases of nephropathy, 30 per cent of cases of nephrosis, and 84.6 per cent of cases of nephritis. Chronic nephritis is a serious complication which frequently necessitates therapeutic abortion. Of the author's cases, therapeutic abortion was done in 36.7 per cent during subsequent pregnancies. The prognosis for both the mother and the child is extremely unfavorable.

HAROLD C. MACE, M.D.

LABOR AND ITS COMPLICATIONS

Koenig, R. The Test of Labor and the Methods of Determining Its Limitations. (*L'épreuve du travail et les moyens de en préciser les limites*). *Revue française de gynécologie* 1934, vol. 66.

The author calls attention to the wide divergence of opinion among obstetricians as to the meaning and limitations of the term "test of labor." This term had its origin in the work of Courvelaire dealing with the management of labor in cases of contracted pelvis. The prognosis of labor, especially in cases of contracted pelvis, depends upon the dimensions of the birth canal (determined by pelvic measurement), the size of the fetal head in relation to the dimen-

sions of the inlet, the moulding of the fetal skull, the resistance of the maternal soft parts, and the efficiency of the uterine contractions. While it is universally agreed that spontaneous delivery is impossible when the true conjugate measures less than 8 cm., there is considerable difference of opinion regarding the outlook in cases of borderline pelvis in which the true conjugate measures between 8 and 9½ cm. Because of the other factors of importance in delivery, pelvic measurement is unreliable as the sole criterion for the prognosis.

Methods of estimating the size of the fetal head and determining the presence of disproportion between it and the inlet, such as the Muller test, are not entirely accurate and not always practicable nor free from danger. The author has given up Muller's method of measurement by impression, limiting himself to determining the presence or absence of engagement or over riding. This method yields no information as to the plasticity of the fetal skull, the type of the presentation, the resistance of the soft parts, or the force of the uterine contractions. The configuration of the skull and the resistance of the soft parts cannot be estimated. Attempts to determine the efficacy of uterine contractions by palpation or by means of a tocometer or an intra-uterine or intra-rectal balloon are impracticable at present.

Attempts to determine an arbitrary limit to the length of labor in terms of hours have been numerous and varied. Some obstetricians urge cesarean section if an advance does not occur within six hours after rupture of the membranes, whereas others advise delaying intervention for at least twenty-four hours. Among those who reject the test of labor is Sellheim. Surgically minded obstetricians, who are guided by the fact that early intervention by the abdominal route is less dangerous than late section, are inclined to curtail the test.

All obstetricians who practice the test of labor agree that the test does not begin until rupture of the membranes occurs. With regard to the indications after the occurrence of rupture of the membranes, opinions differ. The choice of procedure is determined subjectively rather than objectively by personal opinion based on previous experience and personal bias.

Before the work of Walthard and Frey few attempts had been made to determine the part played by uterine contractions in the progress of labor. Walthard and Frey determined the number of contractions during the first and second stages following spontaneous or artificial rupture of the membranes in all types of delivery in cases of normal and contracted pelvis and cases of soft part rigidity. This study, which included several thousand cases, yielded average figures for uterine contractions in spontaneous deliveries, thereby establishing upper and lower limits within which normal delivery can be expected with safety for the mother and baby and beyond which further continuance of the test may be deemed dangerous.

On the basis of the figures of Walthard and Frey which he reproduces in tables, the author has established the following rules with regard to the limits of the test of labor:

1. If labor is not terminated after the maximum number of contractions indicated in the tables it is to be assumed that the obstacle is insurmountable and that intervention is necessary even if the contractions are regular.

2. Intervention is indicated also during the first stage (after rupture of the membranes) if despite the occurrence of regular uterine contractions dilatation does not progress after a minimum of 100 contractions.

3. Intervention is indicated during the period of expulsion when, dilatation being complete there has been no progress during from 25 to 50 contractions.

4. If, after complete dilatation, the head remains above the superior strait, it is to be concluded that the obstacle is insurmountable when engagement fails to occur during from 20 to 25 contractions in the cases of multiparae and during from 25 to 50 contractions in the cases of primiparae.

The author states that the Walthard procedure is an exact method of estimating the efficacy of uterine contractions. It has demonstrated that there is a direct relationship between the number and effectiveness of the contractions. Good contractions are those which recur regularly at the rate of from 5 to 10 every half hour and last for from thirty to sixty seconds. On the basis of records of the number of contractions in every case in which delivery occurred in his clinic since 1933 Koenig confirms the figures of Walthard and their value in the determination of the limits of the test of labor.

In conclusion he says that the method must not be expected to give information other than that of uterine efficiency. The cause of the obstacle can be determined only by a careful obstetrical examination. While the ultimate decision as to management depends upon clinical judgment, counting of the contractions is a more reliable aid to the decision regarding operation than previous favorable or unfavorable experiences. It is an easy method of particular value to the obstetrician of limited experience.

HAROLD C. BLACK, M.D.

Held, E.: The Enumeration of Uterine Contractions During Delivery (La numération des contractions en accouchement) *Rev. franç. de gynéc. et obst.* 1934 xxix, 693

Since 1932 Held has counted the uterine contractions occurring in all of his cases of difficult labor. These cases included those of 115 primiparae with a normal pelvis (premature rupture of the membranes before the onset of labor in 36 and rupture during labor in 79) and those of 24 primiparae with a contracted pelvis. The purpose of the investigation was to determine the limits of the test of labor beyond which interference is indicated in the interests of both mother and child.

The duration of labor and of its different stages is not alone a sufficient indication. While up to a duration of sixty four hours most labors terminate spontaneously and favorably regardless of the time at which rupture of the membranes occurs, this fact does not warrant the conclusion that it is permissible to wait for from thirty two to sixty four hours to distinguish between a pathological and a normal labor. The period of dilatation or of delivery after rupture of the membranes is shorter when rupture of the membranes occurs during labor. As a rule these periods do not exceed sixteen hours. However the significance of sixteen hours of labor is quite different when the pains recur at intervals of two or three minutes than when they recur at intervals of from ten to fifteen minutes. The duration and quality of the contractions are also of significance but are more difficult to estimate. It was because of these difficulties that Frey substituted the number of pains for the time factor as the chief basis for the prognosis.

Held agrees with Frey that the number of contractions is of chief importance. He emphasizes, however, that the strength and regularity of the contractions influence the number necessary to effect delivery. When the contractions are irregular widely spaced or feeble the total number may be increased above the average normal maximum. The number is increased also by fetal factors such as small size of the fetus, a footling presentation, and maceration of the fetus. As a rule sedative and oxytocic drugs employed during labor do not affect the number of contractions but in some cases they increase it. The number of contractions prior to rupture of the membranes is rarely of importance in the determination of the maternal and fetal risk. Intimate contact between the head and the pelvis usually does not occur until after rupture of the membranes, when configuration begins. Therefore fetal distress does not occur until the hydrostatic pressure of the bag of waters is replaced by pressure exerted directly upon the fetal axis. The risks of infection are also increased after rupture of the membranes.

In the cases of primiparae the contractions during the various stages of spontaneous delivery usually do not exceed the following numbers:

1. Rupture of the membranes during or at the end of the first stage. First stage 150 (Frey 101 to 150). Second stage 75 (Frey 51 to 75). Total 200 (Frey 151 to 175).

2. Premature rupture of the membranes. First stage 200 (Frey 151 to 200). Second stage 75 (Frey 51 to 75). Total 250 to 300 (Frey 201 to 250).

Held has seen only 3 cases in which these limits were exceeded and delivery occurred safely. He considers the figures a valuable guide for determining uterine efficiency in the test of labor. Walthard and Frey, the originators of the method, state that intervention is justified whenever 100 contractions do not advance the presenting part after complete

dilatation and rupture of the membranes. Especially when the cervix is oedematous, antispasmodic drugs are generally of no value. Intervention by incisions in the cervix with possibly also the use of forceps is indicated if the head is engaged, and intervention by incisions in the cervix or cesarean section if the head is not engaged. Cesarean section may be indicated also when the head remains fixed in the inlet and dilatation does not occur during the maximum normal number of contractions. Cervical incisions are sufficient only for dystocia due to rigidity of the soft parts.

For the cases of primiparae with a contracted pelvis (true conjugate between 7.5 and 11 cm.) Frey gives the same figures as for primiparae with a normal pelvis. In cases of funnel-shaped pelvis from 20 to 25 additional contractions are usually necessary.

Of 24 cases of contracted pelvis observed by the author, rupture of the membranes occurred before labor in 15. The period of latency ranged from none to thirty-three hours. In 16 cases attended by Held spontaneous delivery occurred within the average maximum number of contractions. In 8 cases in which the membranes ruptured before labor intervention was done. In 3 the intervention was a cesarean section in 5 it consisted of the use of forceps, and in 1 it consisted of the use of forceps and incision of the cervix.

From his experience in cases of contracted pelvis, Held draws the following conclusions:

1. The test of labor begins only after rupture of the membranes.

2. To diminish the dangers to the mother and child the bag of waters should be preserved intact to the maximal dilatation.

3. All patients with dystocia should be observed closely as expectant treatment becomes dangerous as soon as the number of contractions exceeds the average maximum number for the particular stage of labor.

4. In certain cases lack of progress of dilatation during 100 contractions may be an important indication for intervention.

5. Engagement or lack of engagement of the head, the condition of the soft parts, and other factors should determine the method of delivery whether by the abdominal or the vaginal route.

HAROLD C. MACK, M.D.

MISCELLANEOUS

Fairbairn, J. B., Browne, F. J., Cassie, E. and Buchan, G. F.: Are We Satisfied with the Results of Antenatal Care? *Br J M J* 1934, 11, 193-194-197-199.

FAIRBAIRN expressed the opinion that the promotion of normal function has not received sufficient recognition as the primary objective in the supervision of the expectant mother; that the search for trouble has been too much in the foreground and constructive hygiene too far in the background. He

stated that while the supervision of the pregnant woman is well done in the public antenatal clinics and in hospitals with a social service department, both of which have officers especially detailed for home visiting, it is liable to be inadequate in private practice and smaller institutions. He emphasized that it must be thorough and continued. Occasional visits of the woman to a clinic or medical attendant do not afford a satisfactory basis for a prognosis or judgment of the effect of treatment. Because of inadequate supervision disorders in an early stage are often allowed to become serious before correct treatment is begun.

In some large maternity hospitals there is one member of the staff for the prenatal care, another for the intranatal care, and a third for the postnatal care of the mother and another for the care of the mother and infant in the infant welfare clinic. Fairbairn believes that the entire responsibility should be vested in one member of the staff until the mother and infant are passed to the infant clinic. He states that the family practitioner is the ideal supervisor of the mother but must have assistance from a midwife working under his direction to undertake the observational, educational, and mothercraft services.

BROWNE stated that as stillbirths have been notifiable in England only since 1927, records are available for only six years. In 1927 there were 38 stillbirths per 1,000 births. Since then the rate has been increasing steadily. In 1932 there were 41 stillbirths per 1,000 births. Although the mortality of infants under one year of age has decreased considerably, the neonatal mortality shows no corresponding decrease. As the chief causes of neonatal mortality are prematurity, malformation, and obstetrical injuries, antenatal care might reasonably be expected to reduce it, but there is no evidence that it has done so. It is a matter of common knowledge that the maternal death rate has not fallen. In 1911 it was 3.87, and in 1932 it was 4.04 per 1,000 live births. The death rate from eclampsia has changed but little during the last twelve years even though eclampsia is usually preventable.

During the past twenty years there has been a steady increase in the percentage of first deliveries. As eclampsia, accidental hemorrhage, and difficult labor are most common in primiparae, this increase has probably been an important factor in the maintenance of the high death rate.

It is probable that in England as a whole 80 per cent of expectant mothers now receive antenatal care of some kind. However, as many of the most elaborate schemes have been followed for only a year or so, they have not yet affected the mortality. Much antenatal care is inadequate and ineffective. Muir Kerr says: "It is watchful care that is essential. The constant watchfulness on the part of those in attendance tends to slacken as in so many cases nothing abnormal occurs."

CASSIE called attention to the official standard for antenatal clinics set out in a circular issued by the

Ministry of Health in 1939. She stated that a large proportion of women receiving antenatal care at antenatal clinics or elsewhere do not receive it at this minimum standard. This fact may be explained in part by faults of administration or faults in doctors or midwives, but is due undoubtedly to a great extent to the women themselves, since even when facilities are available and freely offered full advantage is often not taken of them.

During the last five years every maternal death in childbirth in Birmingham has been investigated as carefully as possible and an attempt made to determine the influence of antenatal care. Of eighty-seven women who died of intercurrent disease fifty-seven had not received adequate antenatal care. Of sixty-two fatal abortions, thirty-five were probably associated with 'interference.' In nineteen of ninety-eight cases of death from sepsis, antenatal care had failed to give the help that should have been given, and in sixty-one it was insufficient. Of eighty-eight women dying of toxæmia, sixty-four had had too little antenatal care or none at all. In a large percentage of the cases in which death could not have been considered due directly to failure of antenatal care there was no doubt that the standard and amount of that care were altogether insufficient for minimal efficiency.

It is generally agreed that the routine care of the pregnant woman should be given by those who will attend her during labor. Whether the present tendency of pregnant women to enter institutions will go further or the district midwife and the general practitioner will retain their present dominance in the field remains to be seen.

BUCHAN stated that maternal mortality is due in part to lack of antenatal care and that its failure to decrease probably means that the antenatal care given in many places is still insufficient.

The importance of the association of practical midwifery with antenatal work is recognized, but if obstetrical examinations are to yield the best results they must be linked up with confinement. It is impossible for an antenatal medical officer to increase his knowledge unless he is in a position to check his diagnosis and prognosis by the occurrences at confinements. However in only a limited number of instances is the obstetrician responsible for the confinement following the antenatal work of local authorities. A new kind of specialist is required one whose functions would be, first, antenatal care in its wide sense including both the mother and the child second the confinement of the mother and third the care of the mother and child for a period after the birth.

ROLAND S. CROFT M.D.

GENITO-URINARY SURGERY

ADRENAL, KIDNEY AND URETER

Maranon, G. Sola P., and Arguñales, G.: Digestive Symptoms in Chronic Suprarenal Insufficiency (Addison's Disease). *Endocrinology* 9:34 xviii, 497

The authors report a study of the digestive symptoms in a series of 160 cases of well-defined Addison's disease. The symptoms were intense hunger in 3 (1.8 per cent) inappetence in 142 (88 per cent) dyspepsia in 61 (38 per cent) nausea and vomiting in 39 (24.3 per cent) symptoms suggesting gastric ulcer in 3 (1.8 per cent), diarrhea in 45 (28 per cent) constipation in 35 (21.8 per cent) symptoms suggesting peritonitis in 11 (6.8 per cent) and hiccough in 43 (26.8 per cent). In 10 (11.9 per cent) there were no digestive symptoms.

Intense hunger occurred at the beginning of the disease, ceased later and in 2 cases was followed by anorexia. A relationship of this symptom to the hypoglycemia frequently found in Addison's disease is rendered doubtful by cessation of the symptom later in the disease when the hypoglycemia is most marked. The painful type of hunger may suggest a duodenal ulcer especially as certain authorities consider suprarenal insufficiency an important pathognomonic feature of gastroduodenal ulcer. However in none of the authors' cases with this symptom were there any symptoms of ulcer.

The most frequent symptom is inappetence. This almost invariably occurs early, sometimes years before the clinical evidence of typical addisonian symptoms. In some of the reviewed cases it was so severe that the mere sight of food provoked nausea. The authors have noted that it is most marked when the patient lacks hydrochloric acid and that it is rapidly relieved by "artificial opotherapy."

The term dyspepsia is used by the authors to include various gastric disturbances. In some of the cases with this symptom there was hyperchlorhydria, while in others, more numerous, there were vague symptoms of heaviness and gastric fullness, meteorism and somnolence. These symptoms were frequently accompanied by epigastric pain which was fixed or had various irradiations.

Nausea and vomiting appear to be associated especially with hyperchlorhydria. The vomiting may be immediate or late. It varies in character but usually is very bilious. It may be uncontrollable. At times it precedes the final stages of the disease, especially the digestive type of coma (parado-peritonitis).

From an exhaustive study of the relationship between gastric ulcer and Addison's disease, Hernandez concluded that the association of these conditions is favored by the lymphatic constitution,

the hyperchlorhydria which is not uncommon in the early stages of suprarenal insufficiency the vagotonic constitution of persons with Addison's disease, and infection which may destroy the suprarenal glands and affect also the gastric mucous membrane. Hyperchlorhydria may be present throughout the course of Addison's disease or the gastric chemism may be normal. Of the cases reviewed, hypochlorhydria or anchlorhydria was present in those in which the condition was advanced or severe. In the milder cases the secretion was normal or hyperchlorhydria was present. Hernandez and others have suggested that one of the causes of these disturbances of the gastric chemism may be the neurovegetative changes occurring in Addison's disease principally the excessive vagal tone resulting from the absence of the normal stimulus given by adrenalin.

In the cases reviewed, diarrhea was generally associated with gastric disturbances suggesting hyperchlorhydria.

Constipation is usually not severe. It may alternate with diarrhea, especially in the later stages of the disease.

The symptoms of peritonitis are important as they may cause difficulty in the differential diagnosis of Addison's disease from a surgical condition of the abdomen.

Hiccough is frequent in Addison's disease. As it usually begins late in the adidiotic or terminal stage of the condition, it indicates the necessity for prompt effective treatment. CLAUDE D. HOLMES, M.D.

Desmarest and Monier-Vinard: Suprarenal Grafting in Addison's Disease (Greffe surrenale sur un addisonien). *Bull et mem Soc med et hop de Par* 1934 1, 115

The case reported was that of a man thirty three years old who presented the clinical symptoms of Addison's disease and gave a history of tuberculosis of the epididymis and testicle ten years previously. As treatment with suprarenal gland and injections of adrenalin was followed by only temporary improvement, a small fragment of a portion of adrenal gland removed by Lencho from a patient suffering from hypertension was introduced under the patient's skin seven months after the diagnosis of Addison's disease was made. Two months later no improvement being apparent, a large suprarenal gland was introduced into the muscular wall of the abdomen. Forty-eight hours after the operation the patient died in a state of shock despite the administration of adrenalin.

Within two hours after death the gland was removed and placed in fixing solution for histological study. The sections showed complete necrosis

The authors review the literature on suprarenal grafting. Animal and human glands have been used. With the exception of the experiments reported by Sterling in which intratesticular grafts survived three years, the results have been very mediocre or entirely unsatisfactory.

MARK W. POOLE, M.D.

DeCoursey J. L.: Subtotal Bilateral Adrenalectomy for Hyperadrenism (Essential Hypertension). *Ann Surg* 1934, 9, 310

Assuming that the cause of essential hypertension is a hyperplasia of the medullary tissue of the adrenal glands occurring under constant sympathetic stimulation and resulting in the secretion of excessive amounts of adrenalin into the blood stream, the author concluded that the most logical treatment of the condition would be extirpation of the excessive amount of overactive glandular tissue. He performs the operation under spinal anesthesia and in two stages separated by an interval of about two weeks. The portion extirpated includes both medulla and cortex removed at a distance from the entrance of the blood vessels. The kidney is exposed by the usual incision and held down with a special retractor. After the adrenal has been stripped of all fat and overlying structures, the portion to be removed is clamped and excised and the denuded surface is covered with a continuous chromic suture. Throughout the operation the blood pressure is watched closely. If the fall is more than anticipated, ephephrin is given promptly and if collapse occurs, saline solution with adrenalin is administered intravenously.

This operation is considered by the author to be entirely safe. He has performed it in eight cases (sixteen operations). In every case the blood pressure remained low after the operation. The average drop was from seventy to ninety points in the systolic pressure and from forty to fifty points in the diastolic pressure.

As it is probable that the chromaffin system other than the adrenals acts as a storehouse for adrenalin than the adrenals, a slight rise in the blood pressure may occur after the patient returns to his normal activities and persist for several months. In severe cases no untoward symptoms have developed even when as much as three fourths of each gland was removed. DeCoursey concludes that the hypertension may well be regarded as the result of an endocrine dyscrasia for which the adrenals are responsible.

LOUIS NEUWELT, M.D.

Cattaneo M.: An Experimental Study of Chemical Sympathectomy of the Adrenal Vessels (Studio sperimentale sulla simpatectomia chimica dei vasi delle capsule surrenali). *Arch Ital di chir* 1934, xxxvi, 128

Cattaneo states that, so far as he is aware the experiments herewith reported are the first to determine the effect of periarterial sympathectomy on the function of the adrenals. He performed the bilateral operation on eight dogs, using 'isophenal', a 6 per

cent solution of phenol with a small amount of tricrosol to neutralize the caustic action. The animals were studied clinically and curves were plotted for the glucose, calcium and cholesterol in the blood. At the end of from eighteen to forty days the dogs were killed and the adrenals examined histologically.

The blood sugar, calcium, and cholesterol were increased in all of the experiments. The blood sugar reached its maximum four days after the operation and then returned to normal on an average of twenty days. The alimentary hyperglycemia test yielded a typical diabetic curve. The blood calcium showed a transient initial decrease reached its maximum after from fifteen to twenty days and then decreased to normal in the course of a month or more. The cholesterol content reached its maximum in six days and then decreased to normal in from twenty five to thirty days. The author interprets these findings as expressions of hyperfunction of the adrenals following an increase in their blood supply. This theory is supported by the histological picture.

In all of the animals the operation was followed by polyphagia, polyuria, and an increase in weight. Striking phenomena in all cases were priapism and marked psychomotor activity either euphoric or vicious.

Cattaneo discusses his results briefly with relation to the indications for operation. He states that, hitherto, surgery of the adrenals has been directed to the limitation of hyperfunction but that in the future chemical periarterial sympathectomy may be found of value in cases of insufficiency and those in which the glandular functions are threatened by a pathological process. He emphasizes, however, that clinical applications of experimental results should be made with great reserve as the changes produced are transient. M. E. MORSE, M.D.

Clocca E.: Pyelovenous Reflux and Intrarenal Absorption. Critical Study and Experimental Research (Reflusso pielovenoso e assorbimento intrarenale. Studio critico e ricerche sperimentali). *Arch Ital di chir* 1934, xxxvi, 645

Since 1856 it has been known that under certain conditions, suitable substances injected into the renal pelvis may appear in the renal vein and from there enter the general circulation. Clocca reports experiments which he carried out on dogs and rabbits to explain the physiology of this phenomenon. He found that suspensions of bacteria deposited in the renal pelvis by way of the ureter under a pressure of 10 mm Hg could be recovered from the blood current in the efferent vein after a period of ten minutes and that even in the kidneys of rabbits an opaque medium with a specific gravity no greater than 1.060 may cast a shadow due to pyelocanicular reflux. He believes that the relationship between the secretory apparatus and the circulation is very close and complex and that reflux cannot be due merely to the rupture of an angle in the calyces.

EUGENE T. LADD, M.D.

Grauhan, M: *The Development and Form of Hydronephroses* (Ueber Wachstum und Form der Hydronephrosen) 53 *Jag d. deutsch Ges f. Chir.* Berlin 1934

From the size of the shadow in the pyelogram premature conclusions are apt to be drawn regarding the severity and extent of hydronephrosis and the condition of the renal parenchyma. Great care is necessary. In bilateral cases the end stage of hydronephrosis is reached when the patient dies from uremia due to retention. In unilateral cases a diagnosis of advanced hydronephrosis may be made when the kidney is reduced to a thin-walled structure which cannot possibly become any larger. When this stage is reached the hydronephrotic structure shows marked differences in length and volume. These differences are independent of the site, type, or duration of the obstruction. They are determined instead by the functional capacity of the kidney. The functional capacity varies greatly depending upon whether the urinary obstruction occurred while the kidney was still in the process of development (up to about the twenty fifth year of age) or after the kidney had reached its full development. The kidneys of the pregnant woman are in an intermediate position. In a large number of the cases of hydronephrosis it may be determined readily whether the condition began during the developmental period or later in life. The latter is to be assumed when the ureteral obstruction is due to metastases from uterine rectal, or gastric carcinoma, and also in the cases of patients with a prostatic condition patients with inflammatory structures, and certain patients with incarcerated stones. In contrast to these are the hydronephroses which undoubtedly arise during the developmental period (congenital structures and the numerous hydronephroses of doubtful etiology which become manifest at the end of the period of growth). In both groups the growth in length of the kidney is variable. In normal kidneys the distance from the upper to the lower pole ranges quite constantly from 10 to 12 cm. The hydronephrotic kidneys of the first group usually remain within this size. However, there is a definite tendency toward shortening or shrinkage. In the second group the hydronephroses of the period of development, a definite increase in length is noted. In the material examined by the author the maximal length was found to be 27 cm.

The volume or capacity of the hydronephrotic renal pelvis was determined by the author by means of wax casts. In normal kidneys the capacity of the renal pelvis ranges from 1 to 7 c cm but is most commonly 5 c cm. In pronounced hydronephrosis in adults it ranges from 20 to 40 c cm. The greatest capacity found by the author in a far-advanced case of unilateral hydronephrosis was 77 c cm. In this case the volume of the renal pelvis was almost as great as that of the entire organ. However as the total volume of a normal kidney is about 150 c cm it is apparent that hydronephrosis in such cases is associated with shrinkage of the organ as a whole.

In typical hydronephrosis of adult life the capacity of the renal pelvis is usually more than 200 c cm. The maximum of 1,030 c cm found by the author was associated with a renal length of 22 cm. Such a capacity is possible only with extension of the kidney in all three dimensions. In the cases of women with urinary stasis who had had one or more pregnancies the length of the kidney was found to be between 14 and 15 cm and the maximum capacity of the renal pelvis was 125 c cm.

Wax impressions made of hydronephrotic kidneys give a very exact idea of the shape of the dilated renal pelvis. Three types may be distinguished: the ampullar, the normal, with fairly uniform dilatation of the renal pelvis and calyces; and the multilocular with moderate dilatation of the anatomical pelvis and spherical dilatation of the terminal calyces. These types depend on the shape of the outlet of the renal pelvis. They vary in size with every age and with the site of the urinary obstruction but they do not vary in form.

The conditions thus far described produce the picture of uncomplicated hydronephrosis. However, this picture may be modified by changes in the renal parenchyma, especially by sclerosing inflammation. Pyogenic infection causes early injury to the vascular apparatus and scarring of the parenchyma which renders the latter incapable of uniform atrophy or organic growth. Primary hypoplasia of the renal parenchyma present a characteristic picture which is known as dwarf hydronephrosis. The hydronephroses of the developmental period are to be considered as malformations resulting from disturbances of development and are only very slightly amenable to correction. (Z)

BLADDER, URETHRA, AND PENIS

Mihalovici, I: *Urethrography in Infants, with the Report of a Case of Congenital Stricture* (*L'urtrographie chez les nourissons a ec un cas de stricture congenitale*) *J. d'ur. med. chir.* 1934, xxxv, 516

Röntgen examination of the male urethra is possible in very young infants by the injection of a 50 per cent solution of thorotrast into the urethra with a syringe. Thorotrast is not irritating to the mucosa, mixes well with the body fluids, does not precipitate, and penetrates well into irregularities.

The patient whose case is reported by the author was first seen three days after birth. At that time an imperforate meatus was punctured. Following this procedure the infant was able to void in a very fine stream. When he was two months old, the urethra was visualized by the injection of 8 c cm of a 50 per cent solution of thorotrast because of continued difficulty in urination. The roentgenogram showed a narrow stricture of the urethra at the penoscrotal juncture. Above and below that level the caliber of the urethra was wider. After dilatation of the stricture the child voided normally. The author presents the roentgenogram of the urethra of a presumably

normal two-months-old child for comparison. This shows a uniform caliber of the urethra up to the bulb where there was some dilatation.

M. M. ZIMMERMAN, M.D.

Ballenger E. G. Elder O. F. and McDonald H. P.: Neglected Affections and Lesions of the Deep Urethra. *Am. J. Surg.*, 1934, xiv, 301.

The too frequent neglect of lesions of the deep urethra is due to several factors. Routine methods of bladder examination do not include examination of the deep urethra because cystoscopes are not designed for that purpose. When urethral catheters are left in place for pyelography examination of the deep urethra is precluded. Symptoms produced by lesions of the deep urethra are often referred to distant regions. Urethroscopy is usually more painful than cystoscopy.

Nearly all sexual disturbances arise from lesions of the posterior urethra. These lesions are easily found if a careful examination is made with a good cysto-urethroscope. For the treatment of lesions of the verumontanum the authors recommend the application of a solution of 50 per cent phenol in glycerin followed by a 20 per cent solution of silver nitrate. For the treatment of neoplasms of the verumontanum and for lesions elsewhere they employ the high-frequency current.

They state that in chronic infections of the prostate which do not clear up after an adequate course of massage urethroscopy should be employed. Obstructive lesions may be observed and evaluated by careful examination. This should include measurement of the distance from the innermost point of the vesicle neck to the verumontanum.

GILBERT J. THOMAS, M.D.

GENITAL ORGANS

Damak, A.: Antivirus as a Diagnostic Aid in Latent Gonorrhea and the Treatment of Acute Prostatitis and Vesiculitis of Gonorrheal and Non-Gonorrheal Origin (L'antivirus comme moyen de diagnostic de la gonococcie latente et de traitement dans les cas de prostatite et vesiculite aigue d'origine blennorrhagique et non blennorrhagique). *J. urol. med. et chir.*, 1934, xxvii, 418.

In his studies of local immunity Besredka demonstrated the selective action of certain bacteria on those cells which have an affinity for these bacteria. He stated that to obtain immunity against an infection it is necessary to produce an effect on these cells by means of a filtrate of a bouillon of cultures of bacteria which provoke the infection because they possess, on the one hand, the property of inhibiting the proliferation of the organisms and, on the other hand, the property of immunizing the cells against them.

This opinion of Besredka is not shared by all. Some authorities doubt the specific action of these filtrates in the treatment of the diverse human infections, interpreting it simply as the effect of protein therapy.

From a review of the literature dealing with the application of this filtrate in a large number of infectious diseases the impression is gained that the results obtained in most cases were due to a specific effect. The success of this local immunization in various infections suggested a test of the method in gonorrheal infections. From the practical viewpoint this method of treating gonorrhea is associated with difficulties which according to Besredka, depend on certain properties of the gonococci as well as on the anatomical structure of the male urethra and the physiological function of its epithelium.

Hitherto the method of treatment under consideration gave better results in gonorrheal urethritis of women because of the greater chance for longer and more intact contact of the antiviral with the mucous membrane in the urethra of the female which is not as intimately connected with the sex glands as the urethra of the male.

In the sex glands of both the male and the female the gonorrheal process is more tenacious because the epithelium of these glands apparently possesses a greater affinity for the gonococci and furnishes them optimal conditions for propagation.

In an attempt made by the author to determine the effect of the application of the antiviral in cases of gonorrheal prostatitis and vesiculitis the antiviral was introduced by means of a long needle into the penneum or directly into the parenchyma of the prostate or seminal vesicles under the control of a finger placed in the rectum.

The technique of the introduction of the virus is very simple. A quantity of the antiviral is taken into a syringe to which a needle from 8 to 10 cm. long is attached. The left index finger is then inserted into the rectum and the needle introduced in such a manner as to deposit the antiviral in the desired region. To prevent injury to the urethra it is advisable to introduce the needle to the right or left side of the median line. The procedure is well tolerated by the patient. The pain is slight, and there is no shock. The amounts of antiviral used by the author varied from 1 to 3 c.c. given at intervals of from five to seven days.

In latent gonorrhea in the male in which all of the known provocative measures have yielded negative results it is desirable to test the provocative effect of gonococcal antiviral given by perineal injection in amounts of from 1 to 3 c.c. at intervals of six or seven days.

In cases of chronic gonorrheal prostatitis and vesiculitis perineal injections of gonococcal antiviral have no therapeutic effect.

Purulent prostatitis and purulent inflammation of the seminal vesicles should be treated by perineal injections of staphylococcal antiviral introduced into the parenchyma proper or into the vesicles in amounts of 5 c.c. at intervals of one or two days depending on the reaction which shows whether the process is of gonorrheal origin or not. This method of treatment should be considered as specific.

because in the majority of cases prostatitis and vesiculitis are due chiefly to staphylococci.

The staphylococcus antivirus helps also to inhibit the development of other micro-organisms present.

In cases in which there is a distinct fluctuation and the patient is severely ill, surgical treatment is the procedure of choice.

In conclusion the author urges that the antivirus therapy of acute and chronic prostatitis and vesiculitis be tried in large urological clinics in order that the question regarding its specificity and its value may be answered definitely.

ABRAHAM S. SCHWARTZMAN, M.D.

Wildegans, H.: The Endo-Urethral Diathermy Operation for Prostatic Hypertrophy (Die endourethrale Diathermieoperation der Prostatahypertrophie). *35 Tg d. deutsch Ges f. Urol. Berlin*, 1934.

The value of the endo-urethral diathermy operation for prostatic hypertrophy is still disputed. Because of the failures and dangers of Bottini's method, surgeons still mistrust and hesitate to use a method in which, under direct vision obtained with the aid of the cysto-urethroscope, electrocoagulation or, better, electroresection is done with newly devised cold cauterizing instruments which permit cutting under water. The method discussed by the author is of value particularly for patients with prostatic conditions who, without its use, would be doomed to permanent catheterization or a bladder fistula because they can no longer be treated by prostatectomy with hope of a successful result. For such patients and also for those who refuse the usual operation three procedures are available: (1) electrocoagulation, (2) the punch operation with preceding or subsequent cauterization of the wound surface, and (3) electroresection.

For electrocoagulation in prostatic hypertrophy the ordinary button electrode is sufficient. It is more satisfactory to cauterize numerous small areas of the hypertrophied prostate for a short time as prolonged cauterization produces large and deep necroses. The necrotic tissue sloughs away in from eight to ten days. Occasionally active evacuation of the urine and cessation of the torturing ischuria are obtained by a single treatment. As a rule, however several treatments are required and the procedure then makes not inconsiderable demands upon the patient and surgeon.

Certain disadvantages of electrocoagulation must be considered. Even by the most careful preliminary preparation and after treatment of the chronic infectious cystitis the danger of infection caused by the necroses or the starting up of a latent infection is not always avoidable. As a rule phlegmons arising from the bed of the wound need not be feared, and the danger of incontinence is slight after superficial cauterization. Incrustating cystitis and even stone formation around the sloughed tissue can be prevented by cystoscopic examination and treatment. The coagulation not only clears the passage

mechanically but is frequently followed by considerable shrinkage of the adenoma. In general, however electrocoagulation is only a makeshift.

Good results from the punch operation have been reported in America, but in the author's opinion this procedure is overrated. Especially as the result of the work of McCarthy and Wapp, who advocated cutting under water the electrocure was invented. The first instrument, that of McCarthy is a very good one. Heywalt von Liechtenberg, basing his ideas on those of the Americans, then devised an instrument which permits excellent vision and by means of which, with the use of changeable loops, a very good cutting action under water and at the same time a superficial cauterizing effect for hemostasis are obtained. With the aid of this electrocure it is possible to remove spaghetti-like pieces of tissue beginning at the neck of the bladder and continuing through to the urethral part of the prostate. As a rule the hypertrophied middle lobe is attacked first. Injury to the colliculus seminalis must be avoided. A furrow broad and deep enough to restore the patency of the vesical neck is made from the neck of the bladder to the colliculus. After the middle lobe has been excised sufficiently the lateral lobes are reduced, if necessary in a similar manner to restore the patency of the deformed urethra. The amount of tissue removed is of less importance than the site at which the tissue is removed. Removal of tissue from the middle lobe is particularly effective. The preliminary preparation should be the same as for prostatectomy. It is especially necessary to control infection of the urinary tract as much as possible. Sacral anesthesia either alone or supplemented with local anesthesia of the mucosa of the bladder neck and urethra has proved very satisfactory.

Electroresection permits a bloodless operation for fibrous adenomata. In cases of very vascular adenomata associated with marked dilatation and congestion of the urethral vessels the hemorrhage is usually controlled by the superficial coagulating action of the cutting loop and the continuous irrigation. The author emphasizes especially that in this under water cold cauterization there is no danger of an explosion and tearing of the bladder as in the hot galvanocauterization of Bottini.

During the last year Wildegans has treated forty cases of prostatic hypertrophy—fifteen by electrocoagulation and twenty-five by electroresection. The patients ranged in age from fifty-six to eighty-three years. The number of treatments necessary ranged from one to five. In judging the value of the treatment the results of conservative methods must be considered. In twenty-six cases active normal urination with disappearance of all phenomena of irritation and with reduction of the residual urine to from none to 50 c.cm. was obtained. The patient who has been under observation for the longest time still remains cured at the end of a year. Of ten patients who showed considerable improvement, some were under treatment for only a short time.

and some were relieved of their subjective and objective symptoms to such a degree that they asked to be discharged. In one case the treatment failed even though, in several treatments, large pieces of tissue were removed from the middle and lateral lobes. In this case there was marked protrusion of a hypertrophied lateral lobe into the bladder lumen. This type of prostatic hypertrophy does not seem suitable for the treatment. Three of the patients died after coagulation had been done only once. At autopsy it was found that the coagulation was not responsible for the fatal outcome. Two of the deaths were due to bronchopneumonia and one was the result of ascending pyelonephritis with abscesses of the right seminal vesicle and the prostate.

As yet, nothing definite can be stated regarding the permanent results. The reports of McCarthy, Caulk, Kirvin, and others indicate that the effects of the treatment may persist over a period of years. There is no possibility of an anatomical cure as the procedure is only palliative. The treatment is contra indicated by advanced cystopyelitis, but not by renal insufficiency. It is contra indicated also in cases in which renewed hemorrhages occur when the instrument is introduced, those in which the hypertrophied lateral lobe extends far into the lumen of the bladder and those in which there is infection in the region of the prostate, seminal vesicles and neighboring parts. The method is still in the early stages of its development. Further experience is necessary to determine whether more permanent results are obtainable and whether satisfactory results can be expected from this endo-urethral treatment in beginning prostatic hypertrophy. (2)

Bermond, M. Roentgen Therapy of Carcinoma of the Prostate. (Sulla roentgenterapia del carcinoma della prostata.) *Radiol med* 1934 vol 955

The author reports eight cases of carcinoma of the prostate treated by roentgen irradiation since the beginning of 1930. He emphasizes the superiority of roentgen therapy to surgical and medical treatment in this condition. A local clinical cure without recurrence was obtained in all of his cases although three of them presented bone metastases. The palliative results were excellent. The greatest danger is that of metastasis, which may occur soon or several years after the treatment. Roentgen therapy apparently does not overcome the tendency to ward metastasis in cancer of the prostate. The author therefore advises combined roentgen and surgical treatment in advanced cases. He gives roentgen treatment with a single large dose followed it three months later by prostatectomy and after another three months gives another irradiation treatment like the first. Fifty per cent of his patients are still living three years after irradiation.

He advocates brief intensive irradiation in which from 2,600 to 3,000 r are given in four hours over four fields. He believes that fractional methods of irradiation are not advisable as fractioning decreases the efficacy of the irradiation and increases the

radio-resistance of the cancer cells. By many cancer of the prostate is believed to be refractory to roentgen irradiation, but this is true only in a relative sense and only when the wrong technique is used.

AUDREY GOSS MORGAN, M.D.

Cohn, S.: Anterior Pituitary Like Principle in the Treatment of Malescent of the Testicle. *J Am M Soc* 1934, clii 103

The author reports six cases of malescent of the testicle which were treated with subcutaneous injections of antuitrin. In three cases a completely successful result was obtained. In one case in which there was evidence of mechanical obstruction, operation will be necessary. In two cases treated surgically the use of antuitrin was found to be a valuable adjunct to the surgical treatment.

DONALD K. HIBBS, M.D.

Salmon, M. and Contiadeu, X. J. Fibroma of the Testicular Hydatid of Morgagni (Fibrome de l'hydride testiculaire de Morgagni). *J d urol med et chir* 1934, xxxvii, 413

For a long time the hydatids of the testicle and epididymis were considered ganglionic remnants without pathological interest. Morgagni attributed to them a predominant rôle in the production of hydroceles. Interest in these structures was awakened by the work of Mouchet on torsion of the hydatid of Morgagni. With regard to tumors of the hydatid of Morgagni little is known.

In the case reported by the authors a small solid tumor with a pedicle inserted in the anteroposterior pole of the testicle was found. The patient was a man fifty five years of age. At operation the tumor was discovered to be an abnormally developed testicular hydatid. Histological examination showed it to be a pure fibroma containing no muscular fibers but abundant collagenous tissue and presenting inflammatory changes. It was covered by the tunica vaginalis.

Apparently the fibroma developed from the connective tissue of the testicular hydatid of Morgagni. If the latter structure is an embryonic remnant of the superior portion of the canal of Mueller, such a tumor may be related to fibromas of the fallopian tubes.

Pedunculated fibromas of the testicular hydatid of Morgagni are probably rare. In a review of the literature the authors were unable to find the report of a case of the same type as their case.

At autopsy on a man forty years of age who committed suicide, Luschka discovered a testicular hydatid the size of a nut which appeared firm on section. In its center there was a lumen which seemed to communicate with the seminiferous tubules.

According to Lebert, Duplay observed on four occasions minute bodies—some cartilaginous and some osseous, suspended by a thin pedicle which had its origin from the tunica albuginea below the head of the epididymis. These bodies were surrounded by the tunica vaginalis and varied in size

from that of a mullet seed to that of a cherry. Histological details were not given.

At autopsy on a man seventy-four years of age who died of pneumonia, Glass observed a thickening of the tunica vaginalis and on removing the serosa found a pedunculated body 5 mm in diameter on the albuginea. Photomicrographs show clearly that the tumor was a fibroma poor in cells, probably a fibroma of a testicular hydatid of Morgagni. However there was also a proliferation of the tunica vaginalis.

None of these tumors was comparable to the neoplasm in the case reported by the authors. Recently Chevreau made a study of fibromata of the tunica vaginalis. In the center of one of them there was a "collection of epithelioid cells" which could be explained only as embryonic remnants. In the center of another there was an epithelial cavity the structure of which strikingly resembled that of the vas deferens. Like the tumor described by the authors, these observations suggest that embryonic remnants play a rôle in the pathogenesis of fibrous tumors of the tunica vaginalis. They are of value also in explaining the occurrence of foreign bodies in the tunica vaginalis.

In the diagnosis of fibroma of the testicular by dated of Morgagni the connections, site, mobility and opacity of the tumor are important aids. When the neoplasm is not very large only a probable clinical diagnosis is possible.

The treatment indicated is surgical removal.

ALDO S. SCHWARTZMAN, M.D.

MISCELLANEOUS

Mulsow, F. W. and Gillies, C. L.: Primary Pneumaturia. *J. Clin. 1934, xxix, 6.*

The etiology of primary pneumaturia is not well understood as the condition is rare and autopsy has been performed in very few cases.

The first case was recorded by Raciborsky in 1861. In this case there was abdominal colic with pain near the umbilicus and the passage of gas from the urethra sometimes with and sometimes without the passage of urine. The first case to be described in detail was reported in 1860, also by Raciborsky. In this case catheterization of the bladder with a free flow of urine was followed by bubbles of gas. The gas was nitrogen. The urine was normal. The pneumaturia ceased spontaneously and did not recur over an observation period of two weeks.

Etiologically pneumaturia is of the following three types:

1. That due to air introduced from without, as in catheterization or irrigation of the bladder and cystoscopic work.

2. That due to a vesico intestinal or vesicovaginal fistula. This type is not particularly uncommon.

3. That due to gas formed by fermentation in the urinary tract caused by the presence of glucose in the urine, certain types of micro-organisms, or chemical reactions in the presence of infection.

Since 1900 sixteen cases of pneumaturia associated with a fistula between the bladder and intestinal tract have been reported. Most of them were reported because of the difficulty experienced in determining the source of the gas. The fistula may be so small that the gas can pass from the intestine into the bladder without the escape of feces.

While it is well known that the colon bacillus readily ferments glucose with the formation of gas and that the urine of diabetics is frequently infected, there are few reports of pneumaturia associated with diabetes.

Thirteen cases of fermentation in the absence of glucose in the urine have been reported. In cases of this type there is an obstruction of the urinary tract caused by a stricture, enlargement of the prostate calculi, or infection. It has been suggested that the gas is produced by the action of some of the colon group of bacteria on the protein or on blood clots in the urine. However in many cases with both obstruction and infection gas is absent.

The authors report the case of a man fifty-three years of age who was sent to the hospital for X-ray examination of the gastro-intestinal tract for supposed peptic ulcer. There was no complaint relative to the genito-urinary tract. Within the pelvis a smooth spherical mass 6 in. in diameter was found. The lower half of this mass was made up of fluid and the upper half of gas. The duodenal bulb showed a constant and typical ulcer deformity. The bladder was catheterized and gas and urine were collected for analysis. The urine was negative for albumin and sugar but strongly alkaline. When it was examined microscopically long bacilli and very short rods or oval forms were found. Subcultures of the organisms were not gas formers. The gas collected was negative for hydrogen sulphide and ammonia, but showed a 45 to 51 per cent content of carbon dioxide and a small amount of hydrogen and nitrogen. After the bladder was completely emptied there was no further formation of gas although cystitis was present for some time. While under treatment for ulcer the patient suddenly developed a perforation. Thirty hours later he died of septicemia and peritonitis. At autopsy one kidney was found to weigh 80 gm. and the other 100 gm. The bladder was found widely dilated, filled with urine, and lobulated. The only diverticulum discovered was on the posterior wall behind the trigone. The mucosa was smooth and pale and the submucosa edematous. The wall of the bladder showed a diffuse infiltration with large and small round cells.

The authors conclude that the gas was formed either by acid urine from the kidneys acting on the carbonates of the urine retained in the bladder or by some organism which was killed by the strongly alkaline urine in the bladder.

In some of the cases reported in the literature recovery occurred spontaneously or the condition was cured by bed rest, irrigation of the bladder with antiseptics, and the drainage of an infected kidney.

CLAUDE D. HOLMES, M.D.

Gerlach, H. An Experimental Contribution on the Toxicity of Local Anesthetics in Anesthesia of the Bladder and Urethra (Experimenteller Beitrag zur Giftigkeit von Lokalanästhetica bei der Blasen- und Harnrohrenbetäubung) 1933 Königsberg Dissertation

The most frequent and severe intoxications always occur following the use of cocaine as an anesthetic for the bladder and urinary passages because the extent of the resorptive area is an important factor when cocaine is introduced. Of thirty six cases which Gerlach collected from the literature and reviews, death resulted in twelve. In four of the fatal cases the bladder was anesthetized and in eight the urethra. Because of the danger associated with the use of cocaine, numerous other drugs have been suggested, but all of them including alypin and, to a less extent pantocain, have proved to be more or less unsatisfactory. The author gives a detailed critical discussion of alypin, pantocain, and the other drugs.

Of forty three intoxications, sixteen were fatal. Fifteen of the patients who died were men. The bladder was anesthetized in six and the urethra in

ten. In the case of the one woman death was definitely due to overdosage.

At the suggestion of Laewen, Gerlach carried out experiments on animals with pantocain to determine its toxicity when it is used as an anesthetic for the mucous membrane of the bladder and urethra. He reports these experiments in detail. He found that in the bladder of the rabbit cocaine was more toxic than alypin, and that both of these drugs were more toxic than pantocain. The dosage was usually lower than that employed for the induction of anesthesia in other regions. The limits of dosage could not be determined, but when strong concentrations were employed death occurred more suddenly than when very dilute solutions were used. In a few instances the character of the altered mucous membrane explained the intoxication. Alypin was less effective and also less toxic than cocaine. Pantocain proved less toxic than alypin and cocaine. Pantocain has been little tested in urology. Evidently it can be used in the bladder and urethra only when the mucous membrane is intact. By Laewen's sacral method it is possible to obtain anesthesia of the mucous membrane without danger. JANSSEN (Z)

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

CONDITIONS OF THE BONES, JOINTS MUSCLES, TENDONS, ETC.

Wierwick, W. T., and Wiley, P.: The Growth of Periosteum in Long Bones. *Bull J Surg* 1934, xvi, 69

It was once thought that the shafts of the long bones grow interstitially but the experiments of Hunter proved this assumption to be incorrect. Hunter placed markers at definite points on the shafts of growing bones and after a few months measured the distance between them. He found that the markers always remained the same distance apart. This observation established the fact that all linear growth takes place at the epiphyseal lines.

However the question of periosteal growth and the shifting of tendon attachments with bone growth was not settled. In experiments on rabbits the authors repeated Hunter's experiments and, in addition, marked the periosteum with India ink. They found that, while the bone markers remained the same distance apart during growth the periosteal marks became separated from each other. The latter observation demonstrated the occurrence of interstitial growth of the periosteum.

When the ligamentous attachments and the periosteum were marked at the same level there was no change in the relative position of the two marks with growth. The authors therefore concluded that the ligament and tendon attachments to periosteum become shifted along with the interstitial growth of the periosteum. As the ligaments and tendons are not only fused with the periosteum, but go into the bone, they assume that the fibers into the bone are gradually re-formed in new positions in response to the requirements of the mechanical strain.

WILLIAM ARTHUR CLARK, M D

Snyder, C. H.: Deformities Resulting from Unilateral Surgical Trauma to the Epiphysis. *J Surg* 1934, 34, 335

Irregular growth of epiphyses may result from many infectious diseases and local lesions. Cessation of growth on one side may be caused by local accidental or operative trauma. The introduction of metal for the internal fixation of a fracture and curettage near an epiphysis for osteomyelitis may interfere with the normal development of the side involved.

In the elbow and the knee the most common deformity is a varus or valgus angulation. In the knee joint, anteroposterior deformities may also occur. The author cites a case in which growth in the anterior part of the epiphysis of the femur was arrested because during an operation for arthrodesis, the

patella was used as a graft and was placed across the epiphyseal line causing closure of that part of the line. He cites also a case in which arrest of growth of the posterior half of the femoral and tibial epiphyses followed a posterior capsulotomy for tuberculosis and resulted in a gradually increasing flexion deformity and ankylosis. Surgery has been known to arrest the growth of the posterior aspect of the lower tibial epiphysis, thereby causing a marked equinus position of the foot.

To prevent these deformities it is necessary to avoid undue surgical trauma such as excessive curettage or the application and long retention of metal plates, screws, and pins in the region of the epiphysis in children and adolescents.

Correction may be obtained during the growing years by stopping the growth on the other side of the epiphysis or by the application of constant pressure by means of a brace or cast.

WILLIAM ARTHUR CLARK, M D

Hale, C. K., Miltner, L. J., and Chang, C. P.: Tuberculosis of the Shaft of the Large Long Bones of the Extremities. *J Bone & Joint Surg* 1934, xiv, 545

The authors use the term shaft tuberculosis to designate only lesions originating in the metaphysis or diaphysis of a bone. They do not discuss lesions which represent an extension of the disease from the epiphysis or from a joint. They describe three types of tuberculous bone involvement: (1) the periosteal type, (2) the solitary metaphyseal type, which is a solitary low-grade lesion similar to Brodie's abscess, and (3) the infiltrative type, which may involve a portion or all of a bone.

In discussing the pathogenesis of shaft tuberculosis they state that in most respects tuberculous lesions in bone may simulate the osteomyelitic process produced by pyogenic bacteria. The mode of infection is therefore believed to be the same in both conditions.

The authors emphasize that tuberculosis of bone can duplicate the reaction to any type of pyogenic bacterium, and that the reaction set up by the lesion will be governed by the characteristic response of the involved tissue to injury. If the periosteum is involved, the predominant picture will be that of new bone formation, whereas if cancellous bone is involved, destruction will ensue.

Of twenty patients whose cases are reviewed, those with complicating pulmonary lesions did not do well. The authors therefore suggest that in many cases with pulmonary lesions amputation might be advisable as such complete eradication of the peripheral lesion might aid the cure of the visceral focus.

Of the patients without complicating pulmonary lesions, about 75 per cent did well following surgical treatment. The latter consisted of complete excision of the focus followed by immobilization in plaster or in cases with draining sinuses and secondary infection, the Orr method.

JAMES K. STACK, M.D.

Moolnquet P and Rousset, J: Chronic Ossifluent Abscesses Due to the Staphylococcus—the Albuminous Periostitis of Ollier and Poncet (Les abcès ossifluents chroniques à staphylocoque—periostite albumineuse d'Ollier et Poncet) *J de chir.*, 1934, xlii, 161.

Chronic ossifluent abscess, the albuminous periostitis of Ollier and Poncet, occurs most frequently in infants and adolescents and less frequently in young adults. After traumatism or an acute febrile attack, pain and swelling develop in the juxta-epiphyseal region of usually a long bone. The pain soon ceases but the swelling gradually increases. The clinical picture is that of a cold abscess of tuberculous origin. The mass is not tender and is usually fluctuant. Enlargement of the regional lymph nodes may occur. On aspiration a very small amount of serous or serosanguinous fluid is obtained. Bacteriological examination establishes the nature of the lesion. Many types of pyogenic organisms have been found but the most frequent type is the staphylococcus aureus.

The authors report two cases, in both of which the abscess occurred in the thigh and was treated by excision. They distinguish three types of ossifluent abscesses—the extraperiosteal, the subperiosteal and the mixed. In the extraperiosteal type the bone is intact and the periosteum preserves its normal aspect although it may be slightly thickened. In the subperiosteal type sero-albuminous fluid is found at some distance from the bone and between the bone and the periosteum and necrosis and sequestration may occur. The mixed type is a combination of the extraperiosteal and subperiosteal types.

In conclusion the authors discuss the diagnosis and treatment of the lesion and give a brief résumé of all cases reported to date.

NATHAN A. WOMACK, M.D.

Speed, K. Parathyroidism with Multiple Areas of Cystic Bone Change. *Surg Clin North Am* 1934, xiv, 859.

The author reports in detail a case of hyperparathyroidism with skeletal changes which was under observation over a period of about eight years. Cystic tumors were found in the metacarpal bones of the mandible and the ilium. At first these were thought to be giant-cell tumors, but later when the blood calcium was found to be markedly elevated the lesions were attributed to hyperparathyroidism.

The metacarpal bone which was extensively diseased was resected and replaced by a graft taken from the tibia. The transplanted bone survived and at the end of six years presented the structural

appearance of a normal metacarpal bone. There was no evidence of fibrocystic disease in the transplant.

As the patient refused operation on the parathyroids the presence of a parathyroid tumor was not definitely demonstrated.

LESTER R. DRAGSTEDT, M.D.

Agrifoglio, M: Traumatic Periarthritic Ossification of the Hand (Ossificazione traumatiche periarthritiche della mano) *Arch ital di chir* 1934, xxxvi, 409.

The case reported is of special interest because of the unusual site of the post-traumatic ossification. In the literature there are reports of ossification of ligaments and joint capsules, generally in proximity to the inner condyle of the knee. Clinically and roentgenologically the author's case belongs to this group.

The patient was a woman thirty years of age who sustained a Colles fracture in a fall from a tree. A good functional result was evidenced by the roentgenogram but the injury was followed after six months by pain and increasing limitation of movement in the metacarpophalangeal joints. The roentgenogram then showed unattached amorphous calcareous masses in the region of the second, third and fourth metacarpophalangeal joints and the proximal phalangeal joints of the second and fourth fingers.



Fig. 1. Roentgenogram six months after the injury.



Fig 2 Roentgenogram thirteen months after the injury

(Agostino Traumatic Peritarticular Ossifications of the Hand)

These masses gradually increased in size, acquired a bony structure and fused with the lateral margins of the condyles. After fifteen months the formations became complete and after twenty months showed only an increase in density. According to their site, form and direction, the lesions represented an ossification of the collateral ligaments. The other hand and the nervous system were normal.

The etiological factor appeared to be a laceration of the ligaments caused by the impact of the fingers with the ground in a position of hyperextension and radial torsion. The author attributes the bone formation, not to detachment of periosteal fragments, but to the osteoblastic power of the inflammatory connective tissue. The fact that this power is manifested by newly formed connective tissue in only special cases he believes may be related to calcium metabolism. He concludes that in the case reported an increased amount of calcium was present in the circulation following the fracture and during the absorption of the callus, and that this favored calcium impregnation of the hematoma accompanying the laceration. This hypothesis appears to be in agreement with the findings of recent experimental studies.

Prolonged treatment with diathermy and infrared rays resulted in cessation of the pain and subsequent gradual mobilization.

M. E. MOSS, M.D.

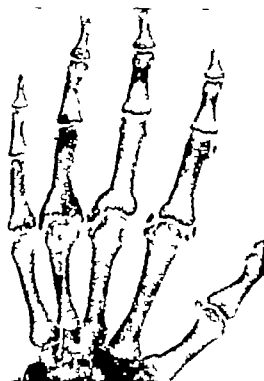


Fig 3 Roentgenogram twenty-one months after the injury

Mueller W: Pathologico-Anatomical Bases of Vertebral Insufficiency (Pathologisch-anatomische Grundlagen zur Insufficiencia vertebralis). *Zucker J orthop Chir* 1934, 12, 68.

In recent years the purely clinical concept of vertebral insufficiency has gradually undergone the necessary separation into individual circumscribed and pathologico-anatomically based disease pictures. Among the most important of the latter is the kyphosis of adolescents, which was largely explained by the investigations of Schmorl regarding the so-called cartilaginous nodules. Of a family of six children, the typical picture of nodular disease of the cartilage was presented by three—two sons and one daughter. This observation demonstrates that the disease is based on a definitely congenital predisposition. In addition, all of the three patients presented in numerous large and small joints the pronounced picture of osteochondritis dissecans with its characteristic roentgenological and clinical changes. Such an observation forces the conclusion that the nodular disease of the cartilage of the vertebral column is similar in nature to osteochondritis dissecans of the joints. The curvature of the spine, which heretofore was usually considered a local deformity, should be regarded as a contracture analogous to the contracture of osteochondritis

Joints. Its uncontrolled advance in spite of considerable support and the constant form of the curvature in the lower thoracic vertebrae are thereby explainable.

Both the kyphosis of adolescents and osteochondritis dissecans of the joints appear at a certain age and are more common in males than in females. The importance of the congenital predisposition to these diseases should be emphasized especially with regard to expert opinion. Special attention should be called also to the backward displacements. These occur almost always in lordotic spines in the region of the middle of the lumbar portion and may lead to true displacement of that portion. The associated subjective symptoms are quite severe. Especially with regard to expert opinion, these displacements should receive greater consideration than has been accorded them heretofore. They are by no means rare, but are very often overlooked because of the accommodation to the loosening of the ligaments and intervertebral disks and the occurrence of marginal proliferations and metaplasia of the vertebrae in the sense of a spondylitis deformans. Spondylitis deformans is not, as is often taught, a disease. It is an accommodation process occurring in the bones in the presence of injuries of the soft parts of the spinal column.

B. VALENTIN (Z)

Mitchell, G. A. G. The Lumbosacral Junction
J Bone & Joint Surg. 1934, xvi 333

The diagnosis of the cause of low back pain and disability has always been difficult. In the author's opinion one of the factors responsible for the difficulty is ignorance of the anatomy and mechanics of the lower back.

Mitchell traces the evolution of the spine from the time when homo sapiens or his ancestors walked on all four extremities. He states that while opinions differ as to the stages of development the prevailing direction of the spinal axis in our primitive ancestors was horizontal while in modern man it is almost vertical. Obviously marked skeletal changes must have occurred to make the change possible. At the sacrovertebral junction such changes are particularly evident and are still occurring in the effort to make the erect position more comfortable. It is important to realize that they are make-shift arrangements at best, this fact undoubtedly explaining many back aches.

The bodies of the last lumbar and the first sacral vertebrae and the lumbosacral intervertebral disk are wedge-shaped with the base forward. Accordingly there is a sacrovertebral angle. When viewed from the side, the angle often appears to be a curve rather than a definite angle. This angle with the lumbar forward convexity is designed to allow the trunk to be held erect despite the position of the sacrum. There are marked differences of opinion as to the character of the angle and how it should be measured.

Other causes of weakness at the lumbosacral junction in addition to its relative instability as

compared with other intervertebral joints are injuries to ligaments and muscles and congenital abnormalities.

In conclusion the author says that the lumbosacral junction is built so skillfully and with such a margin of safety that even when it is greatly modified and distorted it still remains powerful.

JAMES K. STACK, M.D.

Hedrick, D. W. and Jones, H. C.: Pellegrini-Stieda Disease Clinical and Roentgenological Consideration
Radiology 1934, xliii 180

The authors report five cases of Pellegrini-Stieda disease. They believe that the condition is always traumatic and that the pathological lesion is essentially a myositis ossificans. In the early stages roentgen examination is negative but later it shows a typical crescent shaped shadow with its concavity directed toward the internal condyle of the femur but not in contact with the bone.

As treatment the authors recommend the use of diathermy and heat and periods of immobilization and activity. For cases in which there is interference with motion they advocate removal of the mass.

PAUL C. COLOMBA, M.D.

Blücher, E. and Oberholzer, J. The Capsule of the Knee Joint in the Pneumoroentgenogram (Die Kniegelenkkapsel in Pneumoradiographien-Bilder)
Acta radiol. 1934, xv 452

Following a discussion of the roentgenological anatomy of the capsule of the knee joint and its anatomical variations, the authors give a brief summary of the synovial stratum, inner membrane, and capsule of the joint. They then discuss traumatic alterations of the joint capsule and Hoffa's pad of fat, chondromata and osteomata of the joint, and the manner in which inflammatory and non-inflammatory affections in the joint affect the joint capsule. Their observations, which are based on 700 arthro-pneumoroentgenograms from the Surgical Department of the Aarau Cantonal Hospital, demonstrate the great value of oxygen-perabrodil injection as an aid not only to the diagnosis of lesions of the menisci, crucial ligaments, and synchondroses, but also to that of capsular changes in general.

Burman, M. S. Finkelstein, H. and Mayer, L.: Arthroscopy of the Knee Joint.
J Bone & Joint Surg. 1934 xvi 255

The authors describe the instrument and technique used for arthroscopy of the knee joint and report the findings of thirty-arthroscopic examinations. They divide the cases reviewed into three groups: (1) cases of involvement of the menisci, (2) cases of arthritis, including tuberculosis, and (3) cases of miscellaneous conditions. They emphasize that arthroscopy can be done without fear of infecting or traumatizing the joint. They believe that a diagnostic arthroscopy will be of value in many cases in which operation is either impossible or inadvisable.

JAMES K. STACK, M.D.

Lucarelli, G.: Tibio-Astragaloid Tuberculosis and Tuberculosis of the Tarsus (La tubercolosi tibio-astragalica e del tarso). *Clin. chir.* 1934, 2, 453

The author has studied seventy-eight cases of tuberculosis of the tibio-astragaloid area and tuberculosis of the foot since 1926. Forty-five were cases of tibio-astragaloid tuberculosis, seventeen, cases of tuberculosis of the tarsus, and sixteen, cases of combined forms. The ages of the patients ranged from four to sixty-five years, but in most of the cases the condition developed between the twelfth and twenty-fifth years. Lucarelli discusses the pathological anatomy, symptoms, and diagnosis, and includes in his article nineteen roentgenograms of illustrative cases.

From his findings he draws the following conclusions:

TIBIO-ASTRAGALOID TUBERCULOSIS

1. In the cases of children, immobilization combined with heliotherapy and general measures is to be advised. Immobilization should be tried also in the cases of adults, but when improvement does not result after a sufficient length of time, astragalectomy should be done or, in the cases of aged patients, amputation of the leg.

2. In the cases of adults the best results are obtained when the process has not produced abscesses or fistulae.

3. Partial astragalectomy (removal of the posterior portion of the astragalus) may give good results.

4. In severe cases with lesions of the posterior tarsus, amputation of the leg is preferable to posterior tarsectomy.

TUBERCULOSIS OF THE TARSAUS

1. Subastragaloid arthritis has a benign course. Its cure usually requires only immobilization and heliotherapy or at most puncture of the abscess and sequestrectomy.

2. For tuberculosis in other tarsal localizations in children, in whom the process is usually a simple osteitis, immobilization, heliotherapy, and general treatment are sufficient. Immobilization should be tried also in the cases of adults. If it is not followed by improvement, resection of the joint or in the cases of aged patients, amputation of the leg should be done.

3. To avoid deformity of the foot it is advisable to perform a total resection of the joint by the method of Chopart or Lisfranc rather than a partial resection, even in cases in which the lesion is localized to a single joint surface.

4. The surfaces of the bone which come into contact after resection should be well scarified to avoid a stiff foot.

5. In cases of severe diffuse tuberculosis of the tarsus, amputation of the leg is preferable to tarsectomy.

GENERAL CONCLUSIONS

1. Amputation should be done when the gravity of the local lesion, the general condition, or other im-

portant tuberculous foci seem to indicate removal of the foot. Amputation of the leg is preferable to osteoplastic amputation of the foot, Syme's operation, and tarsectomy because it protects against recurrence of the disease and because a good stump and a suitable artificial leg assure the best function.

2. In the pre-operative and postoperative treatment it must be borne in mind that patients with tibio-astragaloid or tarsal tuberculosis very frequently have other tuberculous lesions, especially in the pleura or lungs. EUGENE T. LAMON, M.D.

SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Watson Jones, R.: Reconstruction of the Forearm After Loss of the Radius. *Brit. J. Surg.* 1934, 22, 23

The radial club-hand which results from failure of regeneration after removal of the shaft of the radius in cases of osteomyelitis cannot be successfully treated by bone grafting. The difficulty lies not so much in filling the gap with new bone as in reducing the distal end of the radius to its anatomical position with relation to the ulna.

The author reports a case in which the operation of Hey Groves was done to correct the deformity. The patient was a girl nineteen years of age. Twelve months after diaphysectomy of the radius the old scar was excised and the distal end of the ulna dissected out subperiosteally and transplanted into a drill hole in what remained of the distal end of the radius. The fragments were placed so that the arm would be pronated about 10 degrees from the midline. Almost full length was obtained. Loss of rotation in the forearm was somewhat compensated by rotation in the shoulder which enabled the patient to place her hand flat on a table, against her face or behind her neck. Wrist motion was recovered to about 80 per cent of the normal.

WILLIAM ARTHUR CLARK, M.D.

Ito H., Tsuchiya, J., and Asami, G.: A New Radical Operation for Pott's Disease. A Report of Ten Cases. *J. Bone & Joint Surg.* 1934, 16, 499

In cases of lumbar Pott's disease without involvement of the first lumbar vertebra the authors make a long pararectal incision down to the peritoneum on the left side, retract the peritoneum and abdominal contents, and expose the lumbar vertebrae by blunt dissection. The anterior longitudinal ligament over the diseased bodies is then incised in the direction of its fibers and retracted so that the tuberculous granulation tissue and sequestra may be removed with a sharp curette. The eburnated solid bone surrounding the lesion is removed as it may interfere with filling in of the cavity by new bone.

If an abscess is present, it is aspirated before the vertebra is opened, and if more pus is found the sheath of the iliopsoas muscle is incised and evacuated and then closed tightly in order to isolate it from the diseased vertebra. The incision in the anterior long-

tudinal ligament is then sutured and the abdomen closed.

In cases of Pott's disease of the first lumbar and the twelfth thoracic vertebrae the authors have found it necessary to make an oblique incision in the back parallel with the spinous processes and extending over toward the iliac crest. The deep muscles are divided and retracted medially until the retroperitoneal space is reached. The field is then cleared to expose the vertebra. This approach is inconvenient because of the distance to the diseased vertebra. Another approach includes resection of the transverse process of the first lumbar vertebra or a portion of the twelfth rib. This has the disadvantage of considerable hemorrhage. In the thoracic region the vertebra is approached by a costotransversectomy in which the transverse processes and portions of three ribs in the affected area are removed.

Because of the necessity for immobilization the authors have introduced an Albee spinal graft at a second operation performed three weeks or more later. While this method is satisfactory it requires two operations. Therefore in certain cases the authors have inserted a tibial graft or a portion of rib into a groove made in the bodies instead of the spinous processes of the vertebrae. The lower end of the graft is sharpened to a point and forced into a hole prepared in the body of the lower vertebra while the other end is firmly secured in a longitudinal groove made in the normal vertebra above. When a similar graft from the fibula was placed in the spine of a rabbit after the removal of a vertebral body firm bony union and complete immobilization were found at examination three months later.

Of the ten cases reported by the authors, the wounds healed by primary intention in all but two. In both of the latter, a fistula formed. In one the fistula closed early in the treatment, and in the other it now shows signs of closing. Of the cases in which an abscess was present a recurrence developed in only one. In all of the cases the symptoms for which the patients sought treatment were relieved. In no instance was the operation followed by the development of a deformity or an increase in a kyphosis already present. The earliest operation was performed May 4, 1932.

ROBERT C. LOVERGAN M.D.

FRACTURES AND DISLOCATIONS

Putti, V. The Treatment of Fractures: A Problem of Organization (La cura delle fratture problema di organizzazione). *Chir. e organi di movimento* 1934, dxv 163.

Putti discusses the problem of organization and specialization in fracture treatment. He discusses the modern methods of diagnosis and treatment and asks why they are not better utilized. He stresses the importance of early diagnosis and immediate treatment for satisfactory results. He believes that in many instances the personnel is not adequate, roentgen-ray apparatus is not available and ma-

terial for satisfactory maintenance of position and subsequent physical therapy is insufficient. He is of the opinion that teaching is often at fault as in the universities it is primarily theoretical, and he is convinced that in many large institutions organization is lacking. For the improvement of conditions he urges:

1. All possible aids for immediate treatment including availability of roentgen apparatus at all hours, immediate medical aid and adequate equipment.

2. A number of medical assistants sufficient for the number of patients, and a fracture unit that is independent of other hospital services.

3. A physical therapy unit which is an integral part of the service. BARBARA B. STIMSON M.D.

Blum, L. Overpull During the Treatment of Fractures. *Ann. Surg.* 1934, c, 343.

The author reports a study of twenty three cases of fracture of the shaft of a long bone in which overpull occurred and compares the course in these cases with that in a large series of cases treated similarly without overpull. In the cases with overpull healing was markedly delayed, operative procedures were necessary more frequently and the period of hospitalization was increased.

Overpull usually appears in the first few days and as a rule is not corrected by simple diminution of the pull. For its prevention the author urges a more thorough analysis of all factors involved, especially the condition of the soft parts, before the type and amount of traction are determined.

BARBARA B. STIMSON M.D.

Hansen, J.: The Operative Treatment of Fractures in the Bergmannshell Hospital in the Period from 1925 to 1930 (Die operative Knochenbruchbehandlung im Krankenhaus Bergmannshell 1925-1930). *Arch. f. orthop. Chir.* 1934, xxxiv 369.

Of 3,432 fractures of the long bones treated at the Bergmannshell Hospital in the period of six years from 1925 to 1930 only 102 (2.9 per cent) were treated operatively. In this group there were no deaths. The cases were selected carefully not only from the physical but also and especially from the psychical point of view. The increased danger of infection as an objection to the operative treatment of fractures must be removed by more careful asepsis. Compound fractures recently operated upon are favorable to the occurrence of wound infection. As in the reviewed cases of this type the incidence of failure of the treatment was 50 per cent operative treatment was abandoned for such fractures unless reduction could be obtained easily by interlocking or open reduction in the wound. The open method of treating fractures is certainly associated with an increase in the incidence of delayed union and pseudarthrosis. The reason for this lies not in the method but especially in the type of cases in which operation is necessary. In the reviewed cases of uncomplicated fractures treated by primary

early operation the average length of time required for consolidation was forty days in cases of fracture of the arm, seventy-one days in cases of fracture of the femur, forty-one days in cases of fracture of the leg, and forty-six days in cases of fracture of the forearm.

Operation was performed on all shaft fractures in which, after several attempts at closed reduction, a satisfactory position was not obtained or the reduction could not be maintained (oblique fractures of the leg, transverse fractures of the forearm) all cases of fracture in which the clinical and roentgen findings suggested the interposition of soft parts (cases of diaphyseal fractures with primary or secondary nerve injuries, the large group of cases of fracture with delayed union and cases of peculiar throsis). For cases of avulsion fracture (spine of the ilium, tuberosity of the tibia, greater trochanter and greater tuberosity) and cases of fracture of the clavicle only conservative treatment was considered. Fractures of the patella and olecranon are not mentioned in the article.

The time chosen for the operation was within the first three weeks. After the third or fourth week operation should not be done unless there is urgent necessity for it. In the cases reviewed no foreign material such as Lane plates and screws was used. Three methods of operative technique were employed: (1) open replacement of the fragments in cases in which no particular fixation except interlocking was necessary (43 cases); (2) wire suturing by the method of Magnus, in which the sutures, passed through small tubes around which the skin is secured, are removed later (26 cases); and (3) the use of free autogenous chip transplants by Lexer's method (15 cases of pseudarthrosis and 13 cases of delayed callus formation).

The incidence of failure was 30 per cent. The best results were obtained in fractures of the forearm and the next best in fractures of the tibia. The poor results are to be attributed in part to unsatisfactory and insufficiently prolonged fixation. In 3 cases—1 each of supracondylar fracture of the humerus, supracondylar fracture of the forearm, and typical Colles fracture—temporary nailing through the skin was successful. Beck drilling proved excellent in cases of delayed callus formation. Interlocking yielded by far the best results, especially in the relatively frequent operations on fractures of the forearm. In the latter its results were equal to the best results obtained in cases that could be treated conservatively. Wire suturing by the method of Magnus did not prove satisfactory. This procedure should be used as an independent method only when necessary. Of the reviewed cases of fracture of the forearm, its results were poor in 11 per cent, pseudarthrosis occurred in 16 per cent, and failure of union occurred in 5 per cent but always in only 1 bone. The best method was the transplantation of autogenous bone by the technique of Lexer. This should be employed not only in cases of pseudarthrosis, but also

in those of delayed union. In general it might be advisable to replace wire suturing by the surer and more physiological chip-graft transplantation.

RECONIX (Z)

Nash, J.: The Status of Kocher's Method of Reducing Recent Anterior Dislocations of the Shoulder. *J Bone & Joint Surg* 1934, 21, 535.

In a review of the literature Nash found that Kocher's method of reducing recent anterior dislocation of the shoulder as it was originally described is now seldom used. Modifications and new methods have taken its place. Nash considers many of the premises on which Kocher based his method to be erroneous. He believes that fracture of the greater tuberosity of the humerus is not unusual in dislocation of the shoulder since of a recent series of 127 cases of dislocation of the shoulder reported from Bellevue Hospital New York, such a fracture was present in 28 (22 per cent).

JAMES K. STACE, M.D.

Comolli, A.: A Pathognomonic Sign of Fracture of the Scapula (U sign pathognomonique de fracture de l'omoplate). *Presse med* Par 1934, xii, 1110.

The sign of scapular fracture described by the author is the appearance in the scapular region, shortly after the accident, of a triangular swelling almost reproducing the shape of the body of the scapula. For the determination of its presence the patient must sit in a good light with both scapular regions exposed and the arms adducted. The swelling is due to hemorrhage both anterior and posterior to the bone which is limited by the aponeuroses. The author believes that in cases of fracture in which the sign is absent the larger vessels are not injured or the soft parts are so torn that the blood is not confined by the aponeuroses. When the sign is present, the diagnosis is almost certain.

BARBARA B. STODOLSKY, M.D.

Burnett, J. H.: Fracture of the (Navicular) Carpal Scaphoid. *New England J Med* 1934, cxxi, 36.

The author discusses briefly the mechanism symptoms, progress, and treatment of fractures of the carpal scaphoid. He believes that in cases of recent fracture with good position the wrist should be immobilized for at least six weeks in a plaster-of-Paris cast in the cock up position with slight radial flexion, whereas in those with marked separation or comminution of the fragments operation should be performed at once with removal of part or all of the bone. For cases of fracture that have gone on to mal-union he advocates grafting rather than removal of the bone as the results of the former procedure seem more satisfactory. In the operation he describes a graft about 1 1/4 cm long, 3 mm wide, and 3 mm thick is taken from the upper tibia and carefully fitted into a groove chiselled out of the scaphoid on each side of the fracture. Bone chips are then placed on each side of the graft in the frac-

ture and the wrist is immobilized in a plaster cast for six weeks.

Four cases are reported with roentgenograms.

BARBARA B STIMSON M D

Murray G. Bone Graft for Non Union of the Carpal Scaphoid *Brit J Surg* 1934 vol 1 63

As excision of one or both fragments of the scaphoid in cases of ununited fracture leaves deformity and some permanent disability of the wrist the author advocates bone grafting when both fragments are viable and in apposition and there is no arthritis. He makes a curved incision along the radial surface of the wrist joint with the ends of the incision curved toward the dorsum of the wrist and the concavity directed anteriorly and reaching the tendon of the abductor pollicis longus. The dorsal surface of the radial facet of the scaphoid is then exposed by a transverse incision through the dorsal capsule of the wrist joint. A nick is made in the most prominent area of the tuberosity and a hole drilled from this point across the fracture line. An accurately shaped fragment of cortical bone from the tibia is then fitted snugly into the hole and cut off flush with the surface. After the operation the hand is maintained in a circular cock up cast for eight weeks.

Murray reports five cases with roentgenograms

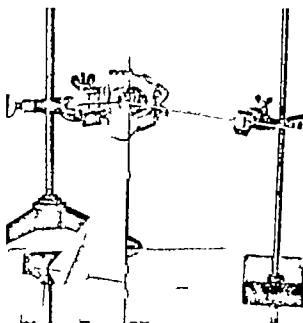
BARBARA B STIMSON M D

Dega, W : Anatomical and Mechanical Studies of the Fetal Hip to Explain the Etiology and Pathogenesis of Congenital Dislocation (Ricerche anatomiche e meccaniche sull'anca fetale rivolte a chiarire l'etiologia e la patogenesi della lussazione congenita) *Chir d organi di movimento* 1933, xviii, 435

This monograph is based on a large number of very accurate measurements of the pelvis and femora of 100 fetuses from the third month onward. The results of the few reported studies of the normal hip of the fetus and the newborn are not wholly in accord perhaps because the technique was not always comparable.

Dega measured the various dimensions and angles of the pelvis, acetabulum and femur with the goniometer and plotted the curves of development of the individual structures and the correlations. The methods are described in detail with photographs, diagrams, graphs, tables, and mathematical formulae.

He concludes that the development of the pelvis, hip joint, and femur occurs under a continuous variation in the proportions of the various parts and their reciprocal relations. Sexual differences (greater than realized heretofore) can be found as early as the third month. In both sexes the pelvis develops much more rapidly in breadth than in the antero-posterior diameter or height, and the acetabulum becomes progressively shallower especially on the left. These changes are more marked in the female than in the male. The construction and relationships



Measurement of the angle of ventral inclination of the fetal acetabulum in relation to the sagittal plane of the pelvis by means of the goniometer

of the joint are adapted to the fetal position of the femur but in both sexes they become progressively less favorable. The injurious factors (all distinctly more marked in the female) are decreased depth of the acetabulum in proportion to the head, external rotation, and adduction with consequent deformity of the acetabulum and especially of its margins. No one of these weaknesses alone can produce dislocation but their combined effects are sufficient to do so.

In the postpartum period the mechanical conditions change entirely because of the gradual extension of the femur guided by the elongation of Bertin's iliofemoral ligament. During this transition the joint is perhaps in more unstable equilibrium than before birth. Rapid extension of the femur in the induction of artificial respiration or in the measuring of the baby a sudden movement of the leg, continuous pressure on the hip or damage to Bertin's ligament during extraction may displace the femoral head. After birth also the joint is more labile in the female.

Three factors influence the development of the hip joint: (1) the hereditary growth curve of the tissues, (2) the adaptation of the femur by flexion to the restricted space in the uterus, and (3) sexual differences, which are probably related to the development of the sexual organs. No other joint develops under conditions so different from those under which it will function later—conditions which prohibit preparation for its weight bearing function. The structure of the hip of the newborn is one of the signs of incomplete adaptation to the erect position. However the maladaptation goes on to dislocation only under the influence of external force.

The article has an extensive bibliography

M E MORGAN, M.D

Divnogorsky B F: Fractures of the Astragalus and Their Treatment (Les fractures de l'astragale et de leur traitement) *Rev de chir* Par 934 Im, 525

The author reviews the literature on the occurrence, etiology and mechanism of fractures of the astragalus. He finds that such fractures are more frequent than was formerly thought. They are usually caused by trauma of considerable violence such as a fall from a height or a blow from a car and often occur in men engaged in arduous activities.

The diagnosis is suggested by fluid in the joint, tenderness over the bone and, in cases with dis-

placed fragments, deformity. It is made certain by roentgen examination.

In simple cases the treatment indicated is the application of a plaster-of-Paris cast for from four to six weeks. In cases with displacement, closed reduction should be attempted. If this is impossible open reduction is necessary. Removal of the bone should be done only in cases with very marked comminution and displacement.

The prognosis should be guarded.

The author reports two cases, supplementing the histories with roentgenograms.

BARBARA B. STODOLSKY, M.D.

SURGERY OF THE BLOOD AND LYMPH SYSTEMS

BLOOD VESSELS

Friedberg, C. K. and Gross, I. Periarthritis nodosa (Necrotizing Arteritis) Associated with Rheumatic Heart Disease, with a Note on Abdominal Rheumatism *Arch Int Med* 1934 liv 170

The authors report four cases of widespread periarthritis nodosa with rheumatic fever and rheumatic heart disease which came to autopsy. The heart disease was manifested by the presence of Aschoff bodies in the myocardium. These four cases were discovered in a series of eight cases of periarthritis nodosa coming to autopsy in the course of two years. Prior to this period five such cases came to autopsy. In two of the five there was a history of rheumatism and there had been evidence of rheumatic valvular disease. In both cases autopsy disclosed verrucous endocarditis.

Criteria for the diagnosis of rheumatic infection and of periarthritis nodosa are discussed. The authors believe that, on the basis of these criteria none of the cases of periarthritis reported in the literature presented adequate evidence of rheumatic heart disease, and that, conversely none of the vascular lesions found in cases of rheumatic fever could be truly called periarthritis nodosa. Because of the frequency of the association of these diseases in their cases and the simultaneous occurrence of the symptoms of each they regard it as probable that rheumatic fever is a common cause of the vascular lesions termed periarthritis nodosa. In two of the cases an attack of scarlet fever occurred eight weeks before the symptoms of the other ailments. This fact is discussed briefly. In another case there was clinical and pathological evidence of malignant sclerosis. In this connection the authors cite Fahr's theory that rheumatic fever is one of the causes of malignant sclerosis. In two of the cases the abdominal symptoms which are so common in periarthritis nodosa dominated the clinical picture sufficiently to lead to an exploratory operation. The authors believe that periarthritis nodosa should be considered when acute abdominal symptoms occur in a patient suffering from rheumatic fever. They suggest that this complication may be an organic basis for some of the cases of so-called abdominal rheumatism.

WALTER H. NADLER, M.D.

BLOOD TRANSFUSION

Skundina, M.: A New Series of Transfusions of Postmortem Blood (Eine neue Serie der Transfusionen von Leichenblut). *Verh. chir. Arch* 1933 xiv, 248

The author reviews 200 transfusions of postmortem blood from 152 cadavers in the cases of 153 patients

and compares the results with those obtained in a previous series. In contrast to the previous series the blood used in the new series was obtained chiefly from the cadavers of persons who died from angina pectoris (59) or alcoholic poisoning (27) and of a few who committed suicide or were killed in accidents.

Pathologico-anatomical findings at autopsy (endocarditis ulcerosa in 4 cases, tuberculosis of the lungs and pneumonia in 2 cases each, and abscess of the lungs, anthrax, dinitrobenzol poisoning in 1 case each) and the results of serological examinations of the blood (a positive Wassermann reaction in 5 per cent and other positive complement fixation reactions in 15 per cent) demonstrated that great care is necessary, and that only blood proved suitable by pathologico-anatomical and serological examination should be used. Because of the necessity for haste this precaution was not taken in 2 cases of gunshot injury, but fortunately no injury to the patient resulted. Not every blood can be employed for transfusion. The blood of drowned persons (hemolysis) and that of persons who died from injury to large vascular trunks (infection) is unsuitable.

The blood is obtained from the jugular vein. That vessel is exposed in the space between the 2 parts of the sternocleidomastoid muscles and 2 cannulae are introduced, one directed proximally and the other distally. The blood may be withdrawn six or seven hours after death without danger of infection.

In the cases reviewed the blood was sometimes preserved for considerable periods of time. In 41 it was preserved for from fourteen to twenty-eight days. Attention is called to the fact that the results which were especially good were obtained with blood preserved for a long time. The author believes that improvement in the methods of blood conservation may render it possible to keep the blood even longer.

In the new series of transfusions the amount of blood given was also increased considerably. In 23 cases 1 liter per day was given in 2 transfusions. Most of these were cases of shock and hemorrhage. The administration of large amounts was never followed by unfavorable sequelae.

In 90 per cent of the cases the blood transfused belonged to the same group as that of the patient. In only 10 per cent did it belong to the universal group. Most of the patients were suffering from shock. In the cases of 73 patients—65 with traumatic and 8 with postoperative shock—91 transfusions were given, and in the cases of 48 with gastric hemorrhages, 72 transfusions were given. A reaction was observed in 21 per cent of the total number of transfusions. A fatal complication developed in 4 cases—a phlegmon of the arm and anaphylactic shock in 1 case each and hemolytic poisoning in 2 cases.

The author draws the following conclusions:

1. The new series of transfusions of postmortem blood indicates that this method is entirely suitable for use in clinical cases.

2. The clinical and pathologico-anatomical changes in complications indicate the necessity of considering the condition of the patient's liver and the dominance of hepatogenous factors over haematogenous factors in uterus after transfusion.

3. Blood transfusion has proved of great value in the combating of shock and hemorrhage.

4. In cases of serious shock, large quantities (from 800 to 1,300 c cm) of blood given in 2 transfusions, before and after operation, are especially effective.

5. In acute internal hemorrhages smaller hemostatic quantities (from 100 to 400 c cm) followed by the transfusion of larger amounts (from 700 to 1,000 c cm) after the operation are of value.

O. ALPOV (L)

Hesse E.: The Non-Specific Protein Reaction of Hemolytic and Anaphylactic Shock Following Blood Transfusion (Die nichtspezifische Proteinreaktion der hämolytischen und anaphylaktischen Shock nach Bluttransfusion). *Vorbericht d. 1. Konferenz Bluttransfusion*. Leningrad, 1933.

Every blood transfusion is an irritating therapeutic measure even if the transfused blood is of the same group as the blood of the recipient. The most severe irritation is caused by blood of an uncertain or different group. The author discusses the phenomena of the non-specific protein reaction, which has much in common with allergy. He believes that previous explanations given for these phenomena should be rejected. He shares the opinion of Lewinsohn that the cause of the protein reaction is protein remaining in insufficiently distilled water and blood left in the transfusion apparatus from previous transfusions. In the Leningrad Chauc triple distillation of the water and very careful preparation and cleansing of the apparatus according to the method of Lewinsohn have considerably reduced the complications incident to transfusion.

Hemolytic shock is still one of the most dangerous complications of the transfusion of blood not properly grouped. Since 1932 the author in collaboration with Filatov has conducted a series of experiments regarding the nature of hemolytic shock. He attributes the renal insufficiency to a primary arterial spasm of the visceral vessels, especially those of the kidney. He believes also that the intoxication phenomena are of considerable significance. At present they are being investigated by some of his co-workers.

Hesse distinguishes the following types of hemolytic shock:

1. The acute type with predominance of heart and blood vessel disturbances resulting in a marked lowering of the blood pressure. In this condition death occurs early (within from one and one half to seven hours) after the transfusion. However this is

very rare. In the majority of cases the first stormy phenomena subside and the shock changes into the second type.

2. The acute type with predominance of kidney insufficiency and without apparent heart or vascular symptoms. In this type death may occur after from five to fourteen days.

3. The acute type in which the symptoms disappear quickly and the condition terminates with absorption of the hemolytic blood by the liver and spleen.

4. The late type with first appearance of the clinical phenomena as late as twenty-four hours after the transfusion. To date, nine cases of this type have been reported. This complication is due to disregard of Subgroups A₁ and A₂ and the use of a universal donor of Group O. In the Blood Transfusion Institute at Leningrad indiscriminate use of universal donors is prohibited. In the literature there are reports of thirty cases of hemolytic shock with eighteen deaths following the use of a universal donor.

The use of a universal donor is permissible only when less than 100 c cm of blood is to be transfused, the erythrocyte count of the recipient is not less than 5,000,000, and the titer of the donor's blood is low (1:8).

The author discusses the nature of hemolytic shock and reviews critically the method of treating this condition with group-similar blood which was proposed and tested experimentally and clinically by himself and Filatov. By this treatment the kidney spasm is immediately relieved and the intoxication phenomena are checked. The previous methods of treatment were all unsuccessful. Vinogradov suggested novocain block of the perirenal fat but Spasokukocky reported a death following this procedure. The author and Filatov have proved that after the introduction of fifteen times the lethal dose of hemolyzed blood experimental animals can be saved by transfusion of blood belonging to the correct group. The value of such treatment has been demonstrated also in a large number of clinical cases.

The length of time after which a transfusion with similar blood will still be successful in hemolytic shock has not yet been determined. In one case kidney function was promptly restored after twenty-four hours of anuria.

The anaphylactic type of shock after blood transfusion has been investigated least of all. After repeated transfusions the danger of this type of shock is definite. The Landsteiner factors M and N seem to play an important rôle. It is of no value to choose another donor for later transfusions. Such a procedure is unscientific. Factors M and N must be taken into consideration. When there is a tendency toward anaphylactic shock, subsequent transfusions should be given only after desensitization. No specific treatment of anaphylactic shock is known. The bronchospasm is influenced favorably by the administration of calcium. (2)

LYMPH GLANDS AND LYMPHATIC VESSELS

Ginsberg, S. *Lymphosarcoma and Hodgkin's Disease*. Biological Characteristics. *Ann Int Med.*, 1934, viii, 14.

The observations made by the author during the past thirteen years in more than 100 cases of Hodgkin's disease and lymphosarcoma are entirely in agreement with the theory that biologically clinically and morphologically these conditions are merely variants of the same disease. In support of this theory a case of Hodgkin's disease and a case of lymphosarcoma are reported in detail. The patients were women past middle life, without any predisposing or exciting cause to explain the development of the condition. No evidence of tuberculosis was found at postmortem examination. Invasion of the capsules of lymph glands, invasion and infiltration of neighboring tissues, and obliteration of the structure of the glands were equally marked in both cases.

The extension was regionally invasive. In both cases metastases through lymph and blood channels, invasion of veins, and hematogenous systemic dissemination were demonstrated. The infiltration of hollow viscera did not differ from the metastatic invasion occurring in cases of epithelial cancerous growths. In both cases there was invasion of bone and in both the lesions were predominantly nodular or diffusely infiltrative in different tissues and organs. Both diseases, although widely generalized were found on gross and microscopic study to be limited to about the same number of organs and tissues. In both necrosis and hemorrhage occurred in the lesions, there was a mild remittent fever and eosinophilia was lacking. Both patients died of toxemia and pulmonary involvement without marked compression of mediastinal structures. In the case of lymphosarcoma the clinical course was twenty four months and in the case of Hodgkin's disease, twenty months. WALTER H. NADLER, M.D.

SURGICAL TECHNIQUE

OPERATIVE SURGERY AND TECHNIQUE POSTOPERATIVE TREATMENT

MacFee, W. F. and Baldridge, R. R. *Physiological Considerations Related to the Infusion Treatment of Shock*. *J. N. Surg.* 1934 c 300

Attention is called to the importance of dehydration as a factor in secondary shock. The authors state that physiological saline solution, if given in large volume, is efficacious in combating shock and shock like conditions. They believe that the danger of overburdening the heart of producing pulmonary oedema, and of increasing hemorrhage by the intravenous administration of large amounts of saline solution has been exaggerated.

SAMUEL KAMM, M.D.

Roscher F. *Investigations of Postoperative Acidosis and Ketonuria*. *Acta Chir. Scand.* 933 170 Supp. xvii

Roscher presents a monograph on postanesthetic physiology. It deals mainly with the effects which anesthetics produce in the body with changes in the urine and the chemical character of the blood. The first part is devoted to the normal acid base balance mechanism of the human organism and the maintenance of a constant hydrogen ion concentration by the various buffers (bicarbonate, phosphates, proteinate). The formula $\frac{CO_2}{NaHCO_3}$ is discussed

with regard to the possibility of increasing or decreasing the acid or alkaline fraction to maintain the constancy of the hydrogen ion concentration regulated by kidneys and lungs by the elimination of acids, the production of ammonia for neutralisation, or the respiratory expiration of carbonic acid. The ketone bodies (acetone, diacetic acid) appear to play an important rôle in postanesthetic physiology caused directly by the narcosis which affects carbohydrate metabolism and prevents complete combustion of the fatty acids as well as the amino acids. Thus there is produced a change in the metabolism very similar to that occurring in diabetes mellitus.

In 65 per cent of cases the urine showed the presence of acetone after anesthesia. By means of the presence of acetone has been considered incidental or due to operative shock. Quantitative analysis during the state of narcosis and a day or two thereafter reveals (1) a fall in the alkali reserve of the body (2) a fall in the hydrogen-ion concentration of the blood, (3) an increase in the total acidity of the urine and (4) an increase of from 50 to 85 per cent in the blood sugar. This acidotic phase is followed by another temporary state known as the "alkalotic phase," which is due to the excretion by the kidneys of ammonia for neutralization. Spinal

anesthesia and local anesthesia do not produce the phenomena so characteristically as does inhalation anesthesia.

The postanesthetic acidosis is considered by some to be due to an inhibition of the oxidative processes of metabolism with a direct effect on the carbohydrate metabolism. Some investigators have noted that the intensity of the postoperative acidosis varies directly with the severity of the temporary hyperglycemia.

Clinically this state is rather difficult to distinguish from the various postoperative reactions. It is characterized by persistent headache, frequent vomiting, sleeplessness, a rapid pulse, a low blood pressure, dryness of the tongue, and marked perspiration. These may become progressively worse and terminate in fatal coma. Adults as a rule rapidly overcome this reaction. Especially after abdominal operations, children are prone to develop a postoperative acidosis in no way associated with recurrent vomiting.

The author recommends the administration of Ringer's solution by rectal drip or subcutaneous infusion and of water by mouth as soon as the postoperative nausea ceases. The use of glucose seems to increase the hyperglycemia.

A plausible explanation of the metabolic phenomenon under discussion is that the anesthetic stimulates an increased production of adrenalin which causes an increased glycogen metabolism resulting in hyperglycemia. It is believed that the narcosis causes an inhibition of all oxidative phenomena in the cells and tissue fluids resulting in incomplete fat and albumin metabolism, the sequel of the disturbance of carbohydrate metabolism. It is not known whether the narcosis is a sequel to the inhibition of oxidation or the inhibition of metabolism due to the anesthetic.

Ether and chloroform are definite protoplasmic poisons which have a specific action on the parenchyma of the liver. It has been shown that an anesthesia of twenty minutes duration has a toxic effect on liver function for a period of eight days. Histological examinations of the livers of experimental animals have shown a slight fatty infiltration of the liver with a reduction of the glycogen depending on the amount of the anesthetic inhaled. Nitrous oxide and oxygen causes no changes in the glycogen picture of the liver. Local novocain anesthesia causes a reduction of the glycogen of the parenchyma of the liver which varies directly with the amount of the solution used, but its effects are not so marked as those produced by chloroform or ether. The hearts of the animals also showed a reduction of the glycogen content. These experimental findings are direct proof that in all cases this peculiar postanest-

thetic physiology is due to the anæsthetic rather than to psychic or traumatic effects.

A control experiment was performed on a healthy individual who was subjected to the same restrictions of diet and fluid intake as patients who had undergone a gastric operation. This individual developed a ketosis and acidosis which were progressive in an acidotic direction whereas persons who have undergone an operation develop a ketonuria which disappears rapidly and a day or two later show a slight ketosis due to hunger.

The ketosis and ketonæmia described usually occur only after chloroform ether and ethyl chloride narcosis. After local or spinal anæsthesia they are rare, a marked hyperglycæmia appearing only in cases of operation for Graves' disease. Postoperative ketosis is never severe in adults who have good kidney function. In children it is more serious, possibly because of the greater lability of the metabolism in the young. In the child it should be treated by the parenteral injection of glucose and insulin.

The importance of Roscher's work lies in the combined quantitative examinations of the blood and urine before, during and after the anæsthesia. It allows for scientific conclusions not possible from the individual observations of previous investigators.

A typical case among those of adults for whom examinations were made during narcosis was that of a man thirty two years old who was operated upon for appendicitis under ether anæsthesia. The carbon dioxide content of the blood which before the operation was 64.51 volumes per cent, fell during the operation to 55.47 volumes per cent. Six hours later it was 57.41 volumes per cent. The next day it rose to 61.43 volumes per cent, but it did not return to the pre-operative level until the sixth day. The hydrogen-ion concentration of the blood, which before the operation was 7.43, was 7.33 at the end of the operation and returned to normal the next day. The blood sugar which was 0.099 per cent before the operation, rose during the operation to 0.133 per cent and at the end of the operation was 0.105 per cent. It did not return to its normal level until the next day. The total nitrogen of the blood rose from 23.18 mgm. to 41.35 mgm. per 100 c.c.m. and returned to normal the next day.

The urinalyses, which were done in close connection with the blood analyses, showed the urine to be positive for acetone in the first postoperative specimen. The acetone content then increased from 0.3358 to 0.4229 gm. per separate specimen and disappeared on the second day. The total nitrogen was very high starting from 9.13 gm. and rising to 14.56 gm. and then to 17.81 gm. As the patient received no food this showed that the organism was burning endogenous albumin. On the second day ammonia became detectable in the urine.

A typical case among those of children for whom analyses were made under anæsthesia was that of a twelve year-old boy who was operated upon for appendicitis. In this case the blood sugar, which prior to the operation was 0.107 per cent, rose to

0.120 per cent and then to 0.181 per cent during the operation and returned to the normal level the following day. Acetone was found in the first postoperative specimen of urine. It rose from 0.166 gm. to 0.614 gm. and did not disappear until the third day. The total nitrogen excreted was very high regardless of the fact that the patient was allowed fluids from the first day after the operation. The total nitrogen excreted was as high as 15.54 gm. and entirely out of proportion to the food ingested.

A typical case among those of adults for whom analyses were made under spinal anæsthesia was that of a man fifty five years old who was operated upon for the removal of a fibrosarcoma of the thigh. The carbon dioxide content of the blood changed from 62.47 to 57.28 volumes per cent during the operation and was normal the next morning. The hydrogen ion concentration of the blood was only slightly affected, and the blood sugar the total nitrogen of the blood and the urine showed no noteworthy changes. These findings indicate that operation under local or spinal anæsthesia causes the least shock.

BENJAMIN G. P. SHATIROFF M.D.

Havlicek, H.: Anatomical and Physiological Bases for the Origin and Prevention of Thromboses (Anatomische und physiologische Grundlagen der Thrombosenentstehung und deren Verhütung) 58. Tag d. deutsch. Ges. f. Chir. Berlin 1934.

The observation that distant thromboses follow ing operations are most frequent after operations in the danger zone near the portal vein has led to new methods of investigating the genesis of these thromboses. Havlicek states that, as he demonstrated in 1925 and again in 1928 in his work entitled 'Vasa privata and Vasa publica', the rapidity of the blood flow in the peripheral veins is simply a function of the injector action of the arteriovenous anastomoses which are well known to anatomists and histologists. These arteriovenous anastomoses act as injectors on the rate of blood flow by carrying arterial blood into the veins. The phenomena of circulation cannot be completely explained without recognition of the possibility of a rerouting from high pressure to low pressure conduction of the veins. Reduction in the rate of blood flow is equivalent to the more or less numerous closures of arteriovenous anastomoses, which may be opened or closed by endogenous substances as well as by a number of drugs. Closure and opening result from swelling or shrinkage of the cells in the arteriovenous anastomoses to which Havlicek applies the term "spring cells". To the drugs which close the anastomoses for hours, thereby slowing the blood stream in the veins, belong particularly those which are used after operations—morphine and preparations of the posterior lobe of the hypophysis.

A newly demonstrated and basic fact in the genesis of distant thromboses is that when the valves which under normal conditions, prevent access of portal blood into peripheral veins become incompetent toxic portal blood may reach the peripheral

veins through communications between tributaries of the portal vein and the vena cava as the result of increased intra-abdominal pressure vomiting, choking, or meteorism. In experiments on cadavers it was found that injections into the inferior mesenteric vein under gentle pressure not only reached the uterine or prostatic plexus through the superior and inferior hemorrhoidal veins, but extended through the iliac, femoral, and saphenous veins to the deep veins of the calf. A series of comparative investigations of peripheral and portal blood revealed astonishing differences between them. These differences included the cellular components, particularly the leucocytes, the sedimentation time of the erythrocytes, and the viscosity. In the peripheral blood the sedimentation rate often exceeded the rate in the portal blood several fold. The mixture of bloods with different electrical charges of the platelets, different viscosities, and varying numbers of formed elements leads, as may be readily shown *in vitro* to agglutinations which constitute the beginnings of thrombi. Injections of a few drops of portal blood into a doubly ligated peripheral vein containing blood resulted in coagulation and adherence of the thrombus to the damaged intima. The demonstration of the possibility of access of portal blood to the tributaries of the vena cava under increased abdominal pressure explains the occurrence of postoperative distant thromboses.

In conclusion Havlicek states that in the five years in which he has treated all operative fields, especially those in the abdomen by ultraviolet irradiation, there has been no instance of thrombosis or embolism. He attributes the protective action of the irradiation to the liberation of endogenous substances which he believes increase the rate of blood flow by their action on the arteriovenous anastomoses. According to the colloidochemical conception of thrombosis a stabilization of the electrical charge of the blood colloids and perhaps a "detoxication" of the portal blood are also possible. Havlicek's observation that distant thromboses do not occur after ultraviolet irradiation was confirmed by Paschoud in his discussion of Havlicek's address on the subject at the convention of the Deutsche Gesellschaft fuer Kreislauforschung at Bad Kissingen. (Z)

ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

Loehr W: The Treatment of Fresh Injuries, Burns, and Phlegmonous Inflammations With Cod Liver-Oil Salve With and Without Plaster (Ueber die Lebertransferrbehandlung mit und ohne Gipsverband bei frischen Verletzungen, Verbrennungen und phlegmonösen Entzündungen) *3 Tag d. deutsch. Ges. f. Chir.* 1934, Berlin.

Loehr has used raw cod liver oil in the treatment of wounds of the most varied types over a period of three and a half years. This was possible because bacteriological studies proved that cod liver oil is sterile and further investigations showed that the

organisms most frequently causing suppuration in wounds—streptococci, staphylococci, and colon bacilli—are soon destroyed when they are introduced into it. The chief purpose of these investigations was to determine whether it was possible to obtain a direct effect on wound flases by cod liver oil comparable to that obtained in the many conditions in which the administration of cod liver oil by mouth gives excellent results. As the cod liver oil is too fluid, it was mixed with sterile vaseline and applied to the wounds in the form of a paste.

The very favorable effect of the cod liver oil on wound healing is manifested by quick cleansing of the wound and rapid separation of all necrotic and necrotoxic tissue. As is true of all processes of wound healing the explanation of this very evident excellent healing effect is difficult to explain. How ever numerous investigators—among them Nordmann, Biscoe, and Katzenstein—have found that vitamins exert a very favorable growth-stimulating influence on tissue cultures, and the pathologist, Dietrich, has demonstrated that the injection of Vitamin D into the ears of rabbits leads to the formation of epithelial cysts and proliferations, a finding which was confirmed by Nordmann. A direct influence of vitamins on wound flases is thereby proved. Other investigators have demonstrated parenteral resorption and effectiveness of vitamins. Accordingly, it seems logical to assume that in the treatment of human wounds with cod liver oil there is a vitamin action such as that which has been demonstrated in animals. Whether still other factors are active in such treatment has not yet been determined and is very difficult to prove.

The cod liver oil is applied directly to fresh wounds in the form of a salve with the aid of a plaster dressing. No drains or strips of gauze are used. The oil has proved especially effective in second- and third-degree burns. In the treatment of burns of the extremities it is used in combination with a plaster dressing, and in the treatment of burns of the trunk in the form of salve dressings. Its effect in stimulating epithelial growth is so extraordinarily great that in the three and a half years in which the author has used it transplantation has never been necessary.

Of equal importance is the effect of the cod liver oil on granulation tissue. The author cites illustrative cases of the most varied types—injuries of the fingers treated with cod liver oil and a plaster dressing, gunshot injuries of the fingers, burns due to acids and hot water scalding injuries, complicated fractures, and defects left by phlegmons and gas gangrene. (Z)

Loehr W: The Treatment of Extensive Superficial First-, Second-, and Third-Degree Burns with Cod Liver Oil (Die Behandlung grosser flächenhafter Verbrennungen 1. 2. und 3. Grades mit Leberterrin). *Chirurg.* 1934, VI, 863.

In the first part of this article the author reviews the principal methods used in the treatment of burns, especially treatment with tannic acid. He

states that none of them always gives satisfactory results. He then calls attention to a new substance for the treatment of burns—a salve made of cod liver oil. He states that cod liver oil is sterile and quickly destroys micro-organisms introduced into it. The cod-liver-oil salve is of such a character that when it is applied to the tissues it melts to an oily mass, penetrates the tissues, and saturates and separates the necrotic and necrobloitic tissue. Although the oil saturated tissue still contains bacteria, the toxicity of the organisms is greatly reduced if not entirely destroyed by the oil. When a burn covered with marked necrotic masses is treated with cod liver oil vaseline, there are soon formed under the oily tissue pulp distinctly healthy granulations which secrete a large amount of pus and should not be disturbed. When this treatment is given late death is not to be feared and in the author's clinic transplantation has been found unnecessary. Even burns of the third degree as large as 45 sq cm become covered with skin without transplantation. Burns of the second degree on the hands, legs, and feet, in which chronic ulcers develop easily because of the movement of the extremities and poor blood supply are treated routinely with cod liver-oil salve and a plaster dressing. As the result of the immobilization and the favorable influence of the cod liver-oil salve large ulcers heal within from eight to fourteen days. Ulcers which are still present after two weeks' treatment with a plaster dressing are quickly healed with cod-liver-oil salve applied with a bandage. The foul odor which sometimes develops when a plaster dressing is left on for a considerable length of time and undergoes marked sweating is easily abolished by the application of a fresh plaster dressing. The epithelialization advances quickly under the plaster and the wound becomes covered with a moist secretion and oil beneath which the granulations develop well. The circular plaster dressing acts in the same way as the Bier moist chamber but allows satisfactory penetration of air and immobilizes the burned extremity.

In burns of the second degree keloid formation has never been observed. In burns of the third degree the burned extremity is encased in plaster or the trunk is placed on sterile towels spread thick with the cod-liver-oil salve and the burned portions are surrounded with dressings on which the salve has been applied thickly. The changing of the dressings is completely painless.

In cases of burns of the third degree with large superficial wounds cod liver-oil plaster dressings are not used as the plaster becomes saturated with the separated oil-soaked masses too quickly and must be changed frequently and in the changing it is impossible to prevent pain. A circular plaster dressing is not applied until the wound has ceased to secrete abundantly. Healing occurs quickly and keloid formation is rare. Cicatricial contractures do not occur or are minimal. Even in cases of deeply penetrating injuries without remnants of epithelium the treatment described is excellent.

Not only burns but also other wounds which can not be closed by suture, such as the large defect left by amputation of the breast, are caused to heal by treatment with dressings of cod liver-oil salve. In cases of burns the mortality has been reduced to 8 per cent, and 4 per cent of this 8 per cent is due to the primary shock produced by the burn. Late deaths from infection and inanition do not occur if the treatment is given correctly.

The author reports cases and presents photographs showing the results of the treatment of burns of the second degree with circular dressings of cod liver-oil salve and plaster and the treatment of burns of the third degree with cod liver-oil vaseline salve with possibly the later use of a circular plaster dressing with cod liver oil. Of special interest is a case of very severe benzine burn of the first to the third degree in which large areas of the body were involved, treatment with tannic acid was followed by deterioration of the general condition, transplantation was unsuccessful, but healing resulted after treatment with cod liver oil. (2)

Dolman C. E.: Staphylococcus Antitoxic Serum In the Treatment of Acute Staphylococcal Infections and Toxæmias. *Canadian M Ass J* 1934, XXXI, 130

The author discusses staphylococæmia and meningitis staphylococæmia in children secondary to osteomyelitis, staphylococæmia in children not secondary to osteomyelitis, and staphylococæmia in adults and adolescents. He reports a few cases of each condition to show the results of treatment with staphylococcus antitoxic serum. He concludes that the best specific treatment available for acute staphylococcal infections and toxæmias is passive immunization with antitoxic serum and later active immunization with toxoid. CARL R. STEINER, M.D.

Smith E. G.: Roentgen Therapy of Actinomycosis. *Am J Roentgenol* 1934, XXXI, 823

The author reviews the literature on the treatment of actinomycosis. Roentgen therapy is regarded as the most efficacious. Iodides may be used in conjunction with it, but their value is doubted by many. Surgery should be used only for drainage and to aid diagnosis. Cervicofacial lesions are the most common and offer the best prognosis under roentgen therapy. In cases of abdominal and thoracic lesions the diagnosis is difficult and the prognosis much less favorable. The mortality is greatest in cases of thoracic lesions.

When the lesion has been definitely diagnosed as actinomycosis, roentgen therapy should be intensive. As a rule recovery is most rapid and uneventful when rather large initial doses are given.

The author recommends as an optimum dose 800 r of deep therapy (1 E.D.) with the use of a 200-kv. peak and a filter of 0.5 mm. of copper plus 4 mm. of celluloid or its equivalent in some other filter. This should be given at intervals of one or two weeks with the use of as many fields as necessary.

Measurements of the ionometric intensity at the surface of, and within, a phantom are submitted. In an investigation of the amount of back-scatter it was found that within the range investigated, the percentage amount of scattered irradiation in the total irradiation is practically independent of both filtration and tube voltage. However the amount of back-scatter is strongly influenced by the size of the irradiated field. Measurements of the percentage depth dose obtained with the normal tin filter are reported.

Coutard, H.: Principles of X Ray Therapy of Malignant Diseases. *Lancet* 1934, CCXXXII, 1

This discussion of the principles of X ray therapy of malignant tumors is divided into four parts dealing respectively with (1) results showing that cancer may be cured by X ray therapy (2) the physical and clinical technique by which cures have been obtained (3) general biological principles and (4) present knowledge of X ray therapy of cancer.

In the first part results obtained in cases studied at the Curie Foundation are tabulated. Of forty-five patients treated for lymphosarcoma of the mouth, tongue, or nasopharynx in the period from 1920 to 1926 eight were alive after seven years of forty-mx treated for epithelioma during the same period, thirteen were alive after five years and eight after seven years and of seventy-seven treated for epithelioma of the larynx, twenty-two were alive after five years and twenty-one after seven years.

In cases of cancer of the uterus the results have been generally better but X-ray irradiation has rarely been used alone. As a rule it has been combined with radium irradiation.

Cancer of the breast appears to be influenced most favorably by X ray irradiation, but to determine the end results the patients must be followed up for a long time after the treatment as in many cases the condition is of slow evolution. In the cases cited by the author the elapsed time has not been sufficient for statistics regarding cure.

Two illustrative cases of cancer of the larynx and pharynx are reported with roentgenograms to show the appearance and extent of laryngeal and pharyngeal lesions which may be caused to disappear by X ray therapy.

The factors considered in the discussion of the physical and clinical technique include tension, filtration, focal distances, fields, and dosage. In the cases cited in the first part of the monograph the procedure was as follows:

With a maximum tension of from 150 to 200 kv a mm of zinc and 1 mm of aluminum covered by 3 cm of wood were used. In the treatment of lesions of the head and neck the focal distances ranged from 50 to 60 cm whereas in the treatment of deeply situated lesions such as cancer of the uterus, they ranged from 80 to 100 cm. The quantity of energy or dose delivered, was measured on the skin and calculated in international r units. The number, shape, and size of the fields or portals of entry varied

according to the extent, depth, and glandular spread of the lesion. In general, in dangerous zones, such as the head and neck, the fields ranged in area from 50 to 100 sq cm and were given alternating cutaneous doses which in some cases reached a maximum of 700 or 800 r per day during one two or three days. Sometimes a dose of only from 200 to 300 r per day or less was used. In tolerant zones, such as the subumbilical abdomen, the fields had an average area of from 150 to 300 sq cm. and were given alternating cutaneous doses not exceeding 500 r per day. Of the epithelial cancers which disappeared definitely those which were radiosensitive and non-infiltrating received depth doses ranging from 3,000 to 4,000 r and those which were radio-resistant received slightly higher doses. These figures represent approximately the doses received by the most deeply situated parts of the neoplasm.

The technique of the treatment consisted in delivering to the deepest parts of the neoplasm the quantity of energy considered expedient. When the distance from the cancer to the skin was great and the fields were small, the total cutaneous dose was necessarily much higher than the cancericidal or depth dose. When the distance from the cancer to the skin is short and the fields are large the total cutaneous dose may be relatively little different from the depth dose. Therefore in the cases of cancer of the larynx in thin subjects the total cutaneous doses were only 50 per cent greater than the dose which would cause disappearance of the cancer whereas in some of the cases of cancer of the uterus they were four times greater than the cancericidal depth dose in spite of the use of large fields. Accordingly the use of from six to eight or more fields was unavoidable.

In the determination of the dose to be administered, reliance was placed preferably on daily examination of the patient rather than on knowledge of the depth dose. The examination involved daily determination of (1) the changes in the appearance of the neoplasm, the vasculoconnective tissue, and the mucous membranes adjoining the neoplasm, (2) the glandular secretions, and (3) the general reaction of the organism.

The most prominent and evident vasculoconnective tissue radioreactions are early edema, erythema of the skin, and local congestion of the mucous membranes. Sometimes they develop in a progressive manner under which circumstances they may not be too harmful. Sometimes they appear suddenly in the course of treatment when the dose or the intensity has been increased too much. Under such circumstances they are as incompatible with involution of the cancer as with conservation of the medium in which the cancer is growing.

The edema, erythema, and local mucosal congestion are most often preceded by slight modifications of the vasculoconnective tissue which sometimes are hardly appreciable locally. These changes being about local and general subjective disorders such as local discomfort, swelling, pain, general

malaise, and, in the more marked cases, nausea, arthralgia, cardiac disturbances, and a rise in the temperature. Sometimes there is a marked disproportion between the small doses given and the severity of the effects produced in the local tissues and the general condition. The general effect of these symptoms necessitates moderation of the treatment because apparently trifling lesions of the vasculoconnective tissue and symptoms hardly appreciable during the course of the treatment are sometimes followed after three or four weeks by marked changes in the normal tissue which increase considerably during a period of years.

The changes in the glandular secretions are manifested by subjective and objective phenomena. When the salivary secretion for example, becomes too abundant, glandular changes are already apparent. Reduction of the treatment must not be delayed until the secretions of the glands of the buccal cavity are thick, viscous, and adherent, the perception of taste is absolute and the patient's nutrition is affected.

The principal guides during the X-ray treatment of cancer are epithelial radioreactions which are more easily observed than the radio-reactions of the vasculoconnective tissues.

The first epithelial radioreaction to be recognized was the cutaneous radio-epithelitis described by Regaud and Nogier in 1913. In 1922 the author described the radio-epithelitis of the mucous membranes of the pharynx and buccal cavity. These two radioreactions occur in the covering pavement epithelial cells. A third reaction is a radio-epithelitis of the columnar epithelial cells.

The three epithelial radioreactions consist essentially in destruction of the epithelial cells covering the site of the irradiated surfaces. On the mucous membranes they are manifested by disappearance of the epithelial layers and denudation of the chorion with subsequent covering of the latter by fibrin and false membranes. When the treatment has been too intense or infection occurs, the false membranes are sometimes blood stained, thick, or grayish. When the dosage has not considerably exceeded the threshold of reaction the false membranes are thin and clear. Under such circumstances the radio-epithelitis is almost painless, does not become infected, and is rapidly repaired, no trace of it remaining.

Cutaneous radio-epithelitis is characterized by loss of epithelial layers and denudation of the dermis. There should be no tendency toward hemorrhage. A slight exudation will not delay repair.

When daily doses of approximately from 350 to 400 r are given in two sittings to the skin of the central region the three epithelial radioreactions are manifested at fixed periods in relation to the beginning of the irradiation. They can be studied particularly well in this region where the different types of mucous membrane are very close to one another. The author describes the successive changes in this region in detail.

The repair of each of the three epithelial radioreactions ought to be at its maximum two weeks after its onset. The radio-epithelitis of the mucosa with stratified epithellium should be repaired by the twenty sixth day at the time of the appearance of the cutaneous radio-epithelitis. Like the radio-epithelitis of the mucosa with stratified epithellium resembling the cutaneous type, the cutaneous radio-epithelitis should be repaired by the thirty ninth day at the time of appearance of the radio-epithelitis of the cylindrical epithellium. Radio-epithelitis of the cylindrical cells should be repaired by about the fifty fifth day. Altogether the three principal epithelial radioreactions are thus spread over six weeks, that is to say they appear at the beginning of the third and disappear at the beginning of the ninth week. At least this is what happens if the irradiation has been given in the time and under the conditions mentioned and with a maximum field of 50 sq cm.

In the treatment of cancers so extensive that fields larger than 50 sq cm are necessary an attempt should be made to obtain epithelial radioreactions lasting for from ten to twelve days. In cases of very extensive cancer necessitating a field of from 100 to 125 sq cm, the duration of repair of the radioreactions should not exceed eight days.

In cases with fields of more than 150 sq cm. and particularly those with large abdominal fields of from 300 to 400 sq cm. loss of the entire epithelial layers should be avoided on the skin as well as on the mucosa of the vagina, intestines, and bladder and care must be taken to prevent cystitis, proctitis, and enteritis. The epithelial desquamation should be effected without laying bare the dermis or chorion. Only the superficial layers should disappear. Cutaneous radio-epithelitis of the abdomen should be non-exudative.

Two examples of radio-epithelitis showing the reparative process are described in detail, and the progressive changes are shown in illustrations.

The general biological principles are discussed with regard to (1) the effect of vasculoconnective tissue radioreactions on the radiosensitivity of cancer cells (2) the daily quantities of energy and the radioresistance of the cancer cells (3) the total quantity of energy or dose and the cure of undifferentiated or not very highly differentiated cancers and (4) the systemic lengthening of the treatment and the cure of differentiated epitheliomata.

In the discussion of the effect of vasculoconnective tissue reactions on the sensitivity of cancer cells the author states that in the case of a very embryonic tumor such as a lymphosarcoma or an undifferentiated epidermic epithelioma, the radiomodifications of the vasculoconnective tissue have a very slight effect upon the radiosensitivity of the cancer cells because this sensitivity is pronounced. In a highly differentiated tumor such as an epidermoid epithelioma with prickly cells predominating which is infiltrating the muscle, or a tubular adenocarcinoma the radiomodifications of the vasculoconnective tissue are of the utmost importance because the radio-

sensitivity of such tumors is feeble. In the first case the effect of the X rays on the cancer cells is always rapid, sometimes immediate. According to their type, the cells of tumors of embryonic type usually die in the course of the first two weeks, more rarely from the fifteenth to the twenty-fifth day after the beginning of the irradiation. Most often the modifications of the vasculoconnective tissue are not sufficiently early nor sufficiently great to reduce the radiosensitivity of the embryonic cancer cells appreciably. In the second case, the effect of the X rays on the differentiated cancer cells is not immediate. Except in the cells which were undergoing mitosis from the beginning of the treatment it appears slowly little by little, in the course of a very long time. If the vasculoconnective tissue remains perfectly normal, the less differentiated cells disappear after the forty-fifth day following the beginning of the treatment and the more differentiated disappear toward the ninetieth and sometimes the hundredth day. If the vasculoconnective tissue is modified by the irradiations, differentiated cells do not disappear.

With regard to the daily quantities of energy and the radioresistance of the cancer cells opinion has undergone considerable change in the course of years because of the varying results noted with different techniques. Clinical observations have shown that changes in the vasculoconnective tissue are due more often to excessive daily doses and excessive intensity per minute than to an excessive total dose. Thus, for the same total dose the daily doses must be increased and the duration of the treatment decreased. Consequently, the shorter the duration of the treatment and the higher the daily doses, the quicker the appearance of the changes in the supporting tissue, that is, the vasculoconnective tissue, and the quicker the reduction of the radiosensitivity of the cancer. Conversely radiosensitivity is preserved longer when the daily doses are weaker that is to say when the duration of the treatment is longer provided the daily doses are not less than the threshold dose necessary for disappearance of the neoplastic cells.

With regard to the total quantity of energy or dose and the cure of undifferentiated or not very highly differentiated cancers the author says that experience in cases treated in the period from 1920 to 1926 revealed that in such cases the technique used caused considerable modifications of the vasculoconnective tissues which apparently were of little importance in the cure of the condition. A cure of differentiated cancers or of cancers infiltrating the muscles was exceptional. Increasing the dose failed to improve the results in the latter group of cases.

The systematic lengthening of the period of treatment of differentiated epitheliomata had its origin in the author's conviction that radioresistance of cancers is the result of excessive daily doses and too high intensity per minute acting through modification of the vasculoconnective tissue, and is not due to spreading of the treatment over too long a time

as was formerly believed. Since 1927 Coutard and his coworker Badier have gradually extended the duration of the treatment for certain cancers from thirty to ninety days by means of weak daily doses in the order of 175, 200, 225 or 250 r per day distributed in two sittings, without varying the other factors and particularly without varying the size of the fields. By this means they were able to obtain disappearance of cancers which formerly they had considered radioresistant and had never cured, such as very differentiated epidermoid epitheliomata invading the muscles and cartilages, glandular epitheliomata of the breast and thyroid, and special round-celled epitheliomata of the upper part of the ethmoid and adjacent sinuses. They believe that in cases of such lesions small daily doses capable of preserving the vasculoconnective tissue and repeated over a period of forty-five, fifty and even seventy days promise a more favorable outcome, give better local results, retard the development of glandular involvement, and decrease the frequency of metastases.

According to our present knowledge of X ray therapy of cancer the time factor in the form of daily repetition of irradiation in uniform or unequal doses and the increase in the number of days of treatment is of importance equal to that of the energy factor which originally was considered the sole factor.

In the treatment of very embryonic, very radiosensitive cancers the energy factor is of chief importance. The action of the X rays seems to be direct and is rapid. The cells die very soon and generally disappear by about the twenty-fifth day. The medium, the vasculoconnective tissue, plays only a very small part. Whereas it is sometimes modified by the irradiation, it is more often modified after the destruction of the cancer cells. The time factor is of importance chiefly for preservation of the general tissues and the avoidance of early and late accidents.

In the treatment of highly differentiated, radioresistant, extensive and deeply situated cancers the time factor is of chief importance. The supporting tissues play a predominant rôle. The action of the X rays seems to be indirect, slow and late. The energy carried each day to the cells should be feeble as the aim should be to bring about the evolution effect, that is, the maturation of the cancer cells, slowly. It seems possible to achieve this aim only if the neoplastic cells assimilate little by little according to their needs, part or all of the slowly delivered energy. If the energy is delivered too rapidly or in too short a time, if it is greater than that which is required by the cells, the excess energy seems to be absorbed by the vasculoconnective tissue and the general tissues. Modifications of the vasculoconnective tissue then result and appear to reduce or annul the evolutionary process.

Like normal epithelial cells, cancer cells undergo a radio-epithelitis which may sometimes be observed in the form of thick false membranes some days

after the beginning of the irradiation. In the case of very radiosensitive tumors this occurs prior to the reaction of normal cells, whereas if the radiosensitivity of the cancer cells is less than that of the mucosal cells it appears later indicating that cure is more difficult to obtain and requires a longer period of treatment. Among the differentiated cancers only the stratified epidermoid epitheliomata and the cylindrical-celled epitheliomata give rise to radio-epithelitis and these do so in an inconstant manner. When radio-epithelitis appears it is always very late. It is produced a long time after the radio-epithelitis of the stratified mucosa which is spread between the fourteenth and the twenty-eighth day. It sometimes appears toward the thirty-fifth day, at other times toward the forty-second day and at still other times toward the fifty-fifth day according to the type of the epithelioma.

The author's conclusions are as follows:

1. The cure of cancer by X-ray irradiation is still difficult.
2. The cure of cancer by X-ray irradiation is still dangerous.
3. Sometimes the margin between the dose which will determine a cure and the dose which will provoke an injury is very small.
4. Daily examination of the patient is necessary. Modification of the normal tissues and of the general condition by X-ray treatment sometimes appears so quickly that it is necessary to diminish the daily dose or the size of the fields.

5. There is no fixed method of treatment. The treatment should be adapted to the individual case and the type of the tumor.

ADOLPH HARTUNG M.D.

Gilbert, R., Bahajantz, L. and Kadrnica S.: The Influence of Roentgen Therapy on the Evolution of Malignant Granulomatosis (L'influence de la roentgentherapie sur l'évolution de la granulomatose maligne) *Acta radiol.* 1934 xv 503

The authors discuss the effects of roentgen treatment on the course of malignant granulomatosis on the basis of sixty cases. These cases showed four types of development. In the acute cases the treatment had no effect at all, and in those of rapid development its effect was slight. In the cases of medium or slow development which constituted 78.4 per cent of the total number it caused a definite alleviation of the symptoms.

From their findings the authors conclude that roentgen treatment considerably prolongs life. In the cases of forty-one patients the average length of survival after the first appearance of the symptoms was four years and eight months, and the average length of survival after the roentgen treatment three years and one month. In the cases of the seventeen patients who are still living the average length of survival since the appearance of the symptoms has been six years and five months, and the average length of survival since the roentgen treatment four years and seven months.

MISCELLANEOUS

CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Tenoff S: The Effect of Blood on the Activity of Micro-Organisms Inoculated into the Peritoneal Cavity (*l'incubation du sang sur l'activité des microorganismes inoculés dans la cavité péritonéale*) *Arch Ital Biol* 1934; xxxvi, 603

Tenoff concluded that the few experimental studies on record regarding the behavior of bacteria in the peritoneal cavity in the presence of blood were inconclusive because the amounts of blood were too small. He therefore performed experiments on rabbits in which he injected known quantities of staphylococcus aureus, staphylococcus albus, streptococcus, colon bacillus, and bacillus prodigiosus intraperitoneally after producing a hemoperitoneum by cutting a mesenteric artery. This method imitates better the conditions occurring in man. The control animals were subjected only to the intraperitoneal injection of equal amounts of bacteria.

The numerical relations of the micro-organisms in the peritoneal exudate were followed for a number of days. In both the animals operated upon and the controls two phases were usually noted although the numerical relationships differed in the two series. In the first phase the number of bacteria progressively diminished. The decrease was more marked in the animals with hemoperitoneum, doubtless because of a bactericidal action of the free blood. If the bacteria were not all destroyed at the end of from six to eight days a second phase characterized by a rapid rise in the number of bacteria and often culminating in peritonitis set in. After exhaustion of its bactericidal power the remaining blood served as a favorable culture medium. If peritonitis did not develop the bacteria diminished again and soon disappeared. In short during the first period the presence of blood re-inforced the defence of the peritoneum, while in the second it favored the development of peritonitis. The blood in itself had no irritating effect on the peritoneum.

Phenomena of this type have been observed clinically in cases of postoperative hemoperitoneum accompanied by infection. Under such circumstances the development of peritoneal complications is delayed.

M. E. Mours, M.D.

Arnulf and Van der Linden: Localized Contracture of the Hand and Forearm Associated with Latent Tetanus. Cure by Serotherapy (Contracture localisée de la main et de l'a. ant-bras liée à un tétanos torpide guérison par sérothérapie) *Rev de chir. Par* 1934; lvi, 49.

The case reported was that of a patient who sustained a lacerated wound of the thenar region of the

right hand. On the day of the injury the wound was sutured and antitetanus serum was administered. After slight suppuration the wound healed. A month later the patient noticed that sudden strong flexion of the fingers of the injured hand produced a temporary toxic flexion contracture of the entire hand and forearm. During the next few days the contracture increased in frequency and severity.

Localized tetanus was suspected. This diagnosis was confirmed when injection of the stellate ganglion on the same side with scrocaline failed to relieve the contracture and eliminated the possibility that it was traumatic. Accordingly tetanus antitoxin was given at various intervals intravenously subcutaneously intraspinally and along the nerve trunks to the hand. Improvement began after about three weeks and was followed very rapidly by complete cure.

The authors emphasize the value of anesthetizing the stellate ganglion in the diagnosis of such a syndrome and the use of perineural injections of serum in the treatment of the condition.

NATHAN A. WOMACK, M.D.

Adair F. E.: Glomus Tumor. *Am J Surg* 1934; xiv, 1.

The author reviews ten cases of glomus tumor. In four the tumor was subungual in four it was located on an upper extremity and in two, it was located on a lower extremity. The characteristic symptom of glomus tumors is pain. Often the slightest pressure elicits excruciating pain. The tumors usually occur in the later periods of life. Of the patients whose cases are reviewed by the author six were males. The average duration of eight of the tumors was nine years. The four subungual tumors ranged from 4 to 6 mm in diameter. The others ranged from 5 to 10 mm in diameter and were elevated from 2 to 3 mm.

The diagnosis is made easy and fairly certain by the location (either beneath the nail or on the hands, arms, or legs) dark rose color, small size, solitary nature, and age incidence of the tumor and the excruciating tenderness and pain it produces. Under the low power microscope the neoplasm appears to consist of irregular, tortuous, cavernous blood vessels with peculiar walls. The lining endothelial cells are cuboidal and rest on a thin collagenous membrane. Some of the vessels are surrounded by a layer of circular muscle passing gradually into a zone of "epithelioid" cells which are globular and show spheruloid nuclei.

Glomus tumors are benign. The most simple, expeditious, and satisfactory treatment is surgical excision under novocain anesthesia. Of the patients whose cases are reviewed by the author eight

were relieved of pain immediately by this procedure and have remained entirely cured

From experience in one case it seems that glomus tumors are resistant to radium. Irradiation of tumors in the matrix and in the nail bed is always unsatisfactory on account of tenderness which develops later and distortion of the nail in its subsequent growth.

HENRY F. THURSTON M D

Bogher J. C.: The Probability of the Chance Occurrence of Multiple Malignant Neoplasms
Am J Cancer 1934, xvi 809

The incidence of multiple primary neoplasms computed from United States mortality rates, if these are reliable and the entire population could be subjected to autopsy, is 1.6 per cent in males and 1.58 per cent in females.

In 1,078 autopsies performed in cases of cancer Warren and Gates found the incidence of primary multiple cancer to be 3.6 per cent in males and 3.0 per cent in females, and in 983 autopsies on persons dying of cancer at the University of Michigan Hospital, the author found it to be 3.6 per cent in males and 1.9 per cent in females. Therefore the actual incidence exceeds the incidence expected from chance alone as estimated mathematically from mortality tables.

An autopsy series such as that from the University of Michigan shows selection with respect to age, sex and sociological and economic factors and a greater effort to obtain permission for autopsy in interesting cases. However the frequency curves resulting from such practical experience have the general form of those based on the United States mortality rates (the operation of chance).

If it is assumed that the risk of acquiring cancer is not spread over the entire population, but is intrinsic in certain individuals, the curves for the latter group would agree with the actual incidence. This is equivalent to assuming that a certain large proportion of the population have an inherent susceptibility to the disease not possessed by all persons.

HARRY C. SALTZSTEIN M D

Boldman C., and Welner L.: Is Cancer Becoming More Prevalent? *Am J Cancer* 1934, xvi, 835

In New York City the proportion of persons over forty-five years of age is now one third greater than a generation ago but no additional increase in diabetes or heart disease has accompanied this aging of the population.

Visible cancer (skin, breast, buccal cavity, female genitalia) has shown practically no change in thirty years although in many age groups the curve for total cancer deaths shows a sharp rise.

It seems logical to the authors to assume that if cancer were becoming more prevalent, as many analyses of crude statistics seem to indicate the visible causes would participate in the increase.

The authors conclude that cancer is no more prevalent now in any age group than it was a generation ago.

HARRY C. SALTZSTEIN M D

DUCTLESS GLANDS

Musulo-Fournier J. C., Larrosa Heiguera, R. A., Castiglioni, C. A. and Andio B. Familial Infantism Due to Hypophyseal and Thyroid Insufficiency *Endocrinology* 1934, xviii 533

The authors report five cases of familial infantism due chiefly to hypophyseal insufficiency. The subjects were a brother and four sisters. The outstanding clinical findings were small stature, atrophy of the sex organs of the male, absence of menstruation in the females, delayed epiphyseal closure, marked dryness of the skin, excessive sensitivity to cold and a low basal metabolic rate. The thyroid insufficiency was manifested chiefly by the extreme sensitivity to cold. As in three cases in which a course of thyroid treatment was given the basal metabolic rate was increased and the sensitivity to cold seemed to be decreased the authors concluded that thyroid insufficiency played a secondary rôle in the condition.

HENRY F. THURSTON M D

Doederlein G. Further Experimental Investigations of the Effect of the Thyrotropic Hormone of the Anterior Lobe of the Hypophysis (Weitere experimentelle Untersuchungen ueber die Wirkung des thyrotropen Hormons des Hypophysenvorderlappens) *Arch f Gynaek* 1933, cxv 22

In earlier investigations of the morphological and functional changes occurring in the thyroid of guinea pigs under the influence of preparations of the anterior lobe of the hypophysis, such as prolactin, the author observed definite signs of an activation of the thyroid parenchyma and luteinization of the generative glands. Since then, a gonadotropic and a thyrotropic hormone have been isolated from the anterior lobe of the hypophysis by others.

On the basis of recent experiments on male and female guinea pigs the author reports that the preparations of the anterior lobe of the hypophysis obtained from the urine of pregnancy are very dissimilar in their morphological and functional effects on the thyroid. While the thyrotropic hormone may be present in the preparations obtained from the urine of pregnancy a regular influence of these preparations on the thyroid is not to be expected. Therefore, urine preparations are unsuitable for studies of the effect of the anterior lobe of the hypophysis on the thyroid. On the other hand there is general agreement in the literature that preparations obtained from the anterior lobe of the hypophysis are reliable. The findings of morphological studies of the thyroid, the decrease in the body weight, the increase in the basal metabolic rate up to 60 per cent, the disappearance of glycogen from the liver, the increase in the content of iodine in the blood, and the findings of chemical analysis of the internal secretion of the thyroid after the administration of the thyrotropic component of the anterior lobe of the hypophysis suggest that the thyrotropic component of the anterior lobe of the hypophysis exerts a direct regulating effect on the thyroid.

The author investigated also the permeability of the placenta for the thyrotropic hormone. In three pregnant guinea pigs he obtained an effect on the thyroids of the embryos by injecting large amounts of thyrotropic hormone without causing abortion. He cites this finding as an indication that the thyrotropic hormone of the anterior lobe of the hypophysis passes through the placenta and influences the thyroid gland of the fetus in the same way as direct implantation of the material influences the thyroid gland in growing and adult animals.

H. SZOKOSZ (G)

Gutman, A. B., Swenson, P. C., and Parsons, W. B. The Differential Diagnosis of Hyperparathyroidism. *J Am Med Ass* 1934 CIV, 87

The authors describe the general symptoms in hyperparathyroidism and report in detail 4 new proved cases of the disease, making the total number of cases to be recorded 115.

They emphasize that the essential feature of the disease is the presence of a parathyroid adenoma which causes increased liberation of parathyroid hormone into the blood stream. The increased secretion of parathyroid hormone results in the removal of calcium salts from the bones with consequent generalized rarefaction of the skeleton, an increase in the concentration of calcium and a decrease in the concentration of phosphorus in the blood, and an increase in the excretion of calcium and phosphorus in the urine.

The authors state that the differential diagnosis of hyperparathyroidism on the basis of the symptoms alone may be extremely difficult as the onset of the disease is usually insidious, the early manifestations are extremely varied, and variations from the classical picture are frequent.

Of the total number of 115 cases to be recorded to date, 86 were those of females. In the majority the condition occurred during the middle decade of life and its course was measured in years rather than in months. It begins most frequently with pain, usually a dull ache in the lower part of the back, the legs, or the arms, which is intensified by exercise and often associated with stiffness in the joints. Bone tenderness, localized at first, is common and may eventually become generalized. Muscle weakness with hypotonia may be so marked as to suggest Addison's disease, myasthenia gravis, or progressive muscular dystrophy. Multiple bone swellings, often tender and painful, occur frequently in the jaws, tibiae and phalanges. Pathological fractures resulting from the slightest trauma are frequent in late stages of the disease. Non-union or malunion may produce very extensive deformities. Polyuria and polydipsia, perhaps due to the increased excretion of calcium, may be so marked as to suggest diabetes insipidus. In about 10 per cent of the cases renal colic is the chief symptom. In other cases the condition is associated with intractable nausea, vomiting, and constipation. A tumor of the neck is palpable in about 10 per cent of cases.

The X-ray findings are especially significant. The outstanding feature is a generalized decalcification of the skeleton with the formation of multiple small cysts. In the skull, the calvarium has a finely granular appearance, the bones may be thickened and the tables indistinct. In the long bones the decalcification leads to a marked thinning of both the cortex and the trabeculae with indistinct, fuzzy outlines. The vertebrae show a granular pattern much like that in the calvarium with an added coarsely striated appearance.

Grossly the parathyroid tumor is an encapsulated, soft, lobulated, yellowish-gray mass. Under the microscope it is seen to be composed chiefly of syncytium-like groups of large cells containing large oval, darkly stained nuclei with abundant pale, granular cytoplasm closely packed or arranged in small alveoli enclosing pink-staining colloid-like material. A few small nests of water-clear and rose red cells are seen.

LESTER R. DRAGSTEDT, M.D.

Nordmann, O.: Extirpation of the Parathyroid Glands in Osteitis Fibrosa Generalisata (Exstirpation der Epithelkörper bei Osteitis fibrosa generalisata). *58 Tag d deutsch Ges f Chir* Berlin, 1934.

To determine the relationship between osteodystrophia fibrosa generalisata and hyperfunction of the parathyroid glands the following three questions must be answered:

1. Are there cases of parathyroid enlargement without osteodystrophia fibrosa generalisata? This question must be answered in the affirmative. Enlargement of the parathyroids may occur also in cases of carcinoma metastases in the bones without evidence of osteodystrophia fibrosa generalisata.

2. Are there cases of osteodystrophia fibrosa generalisata without enlargement of the parathyroid glands? Bergmann, Stenholm, and Wendt have reported cases of this condition in which microscopic examination revealed no changes in the parathyroid glands. However attention must be called to the fact that even at autopsy it is exceedingly difficult to find the parathyroid glands, and that, as demonstrated by the studies of Erdheim, parathyroid glands may be present within the substance of the thyroid gland. On the other hand, as there are also cases in which more than one parathyroid gland is enlarged, it is necessary to consider the possibility that these changes represent only one of a series of endocrine disturbances.

3. Are there cases of osteodystrophia fibrosa generalisata in which the extirpation of one parathyroid gland is unsuccessful and does the extirpation of a parathyroid gland, especially a pathological parathyroid gland, have a beneficial effect upon the disease? In connection with these questions it must be borne in mind that spontaneous remissions occur in the disease and that even conservative treatment may bring about temporary improvement. According to Lotzsch patients who are untreated usually die of marasmus or a pulmonary or cardiac condition.

following prolonged confinement to bed Meyer observed the spontaneous cure of osteodystrophia fibrosa generalisata in a woman thirty two years of age who had had the disease for eight years. It is known also that the use of a diet with a high vitamin content and treatment by ultraviolet and roentgen ray irradiation may be beneficial. Wilder found that after such treatment the condition improved in some cases and became worse in others. Snapper has reported a case in which recovery resulted spontaneously after operation had been unsuccessful. In general it appears advisable to try conservative treatment first.

In the literature there are records of thirty nine cases treated surgically. Nordmann believes that a much greater number of cases have been operated upon, but that many of them have not been reported because the operation failed. Of the cases recorded, operation was unsuccessful in six. Three of the patients died of tetany about three weeks after the operation. In three cases no changes were found in the parathyroid glands. In three cases, a parathyroid adenoma was removed the patients survived, but showed no improvement. Successful results were obtained in twenty-nine cases.

Nordmann presented an unmarried woman thirty nine years of age who was completely cured by an operation performed one and a half years ago. This patient first developed symptoms of osteodystrophia fibrosa generalisata in 1928. She was first treated by Fleischmann in the Schoenberg Hospital by conservative measures, but her condition gradually became worse. The hemoglobin decreased to 30 per cent. The serum calcium was 14 mgm. per 100 ccm. Roentgen examination disclosed cysts in the left tibia, the ribs, the mandible, the scapula and other bones. On July 20 1932, Nordmann exposed the thyroid gland and removed two or possibly three parathyroid glands. One of these glands was the size of a pea. The wound healed by primary intention. During the first two or three days after the operation several attacks of tetany occurred, but ceased after the administration of calcium. The calcium in the blood decreased to 8 mgm. and the calcium in the urine to 30 mgm. per 100 ccm. During the next month the foci in the bones cleared up completely. The hemoglobin rose to about 60 per cent. The patient's ability to work has been completely restored.

According to Salvesen tetany is produced, not by the fall in the blood calcium in itself but by the rapidity of the fall. Nordmann says that since reviewing the literature he does not hesitate to operate a second time when the results of the first operation indicate that the amount of parathyroid tissue removed was not sufficient.

In the discussion of this report, ORTH (Hamburg) reported a case in which he resected two-thirds of the thyroid and probably four parathyroid glands. One of the latter was hyperplastic adenomatous and as large as an almond. The result of the operation was very good but persisted for only a year.

HELLSTRÖM (Stockholm) reported that he had extirpated a parathyroid adenoma in three cases of osteitis fibrosa generalisata with hyperparathyroidism. All of the patients recovered and became able to work. Two of them were followed up for more than two years and one was under observation for six months. In one case the removal of a parathyroid adenoma was followed by only temporary improvement but when another adenoma was removed at a second operation all symptoms of hyperparathyroidism quickly disappeared. In a fourth case the condition was at first thought to be a giant cell sarcoma of the maxilla with generalized metastasis. As the basal metabolism was +60 a tumor in the neck was thought to be a toxic thyroid adenoma producing symptoms and was treated by X ray irradiation. When examined again six years later the patient who previously had been completely incapacitated was well and able to work. A year and a half later she died of uremia from chronic pyelonephritis. Autopsy revealed a healed osteitis fibrosa generalisata and a parathyroid adenoma showing definite regressive changes. This case suggests that, in hyperparathyroidism X ray irradiation of a parathyroid adenoma may have the same effect as extirpation of the adenoma. However, the extremely good results of parathyroidectomy indicate that in osteitis fibrosa generalisata a search should be made for a parathyroid tumor and if such a tumor is found it should be removed.

GUERSCHING (Berlin) called attention to another indication for the removal of parathyroid tumors in osteitis fibrosa generalisata. He stated that as the result of the continuous removal of calcium from the bones the tissues are frequently flooded with calcium and calcium deposits often occur in several organs, especially the kidneys. The function of kidneys so affected is severely injured. Water elimination and the concentrating ability of the kidneys are decreased and the residual nitrogen in the blood is increased. Guerschling believes that when such signs of kidney injury are noted operation is indicated to prevent further renal damage. He states that death from uremia in cases of osteodystrophia fibrosa generalisata with such kidney damage has been reported several times.

STICH (Goettingen) called attention to the fact that the prognosis in cases of osteitis fibrosa may not be favorable even after the extirpation of a parathyroid tumor. According to Bauer and Kienboeck, a recurrence of the symptoms has developed in Mandl's well known case. Bauer and Kienboeck are therefore inclined to assume that this was not a case of typical osteitis fibrosa but a case of Paget's disease of bone with a parathyroid tumor.

HEIDELMANN (Bonn) cited a case in which in 1931 von Redwitz removed a parathyroid tumor from a man forty two years old who had been confined to bed by osteodystrophia fibrosa generalisata for several months. After the operation the previously greatly increased serum calcium decreased to normal and at first was even subnormal. After two

and a half months the patient was able to work, and today he is still well. The X-ray findings have remained unchanged. After the injection of parathyroid hormone, the serum-calcium curve, which was very abnormal before the operation, became nearly normal. (Z)

SURGICAL PATHOLOGY AND DIAGNOSIS

Dudgeon, L. S. and Barrett, N. R.: The Examination of Fresh Tissues by the Wet Film Method
Brit J Surg 1934, xxx, 4

The use of the wet film method of diagnosis, first described by Dudgeon and Patrick in 1927 is a valuable aid to the rapid diagnosis of tissue changes. The materials required are so few and the preparation of the films is so simple that diagnoses can be made accurately without complicated laboratory procedures and in out-patient departments. In the operating theater the method has proved of definite advantage in supplementing gross examination with a rapid microscopic technique. Of 58 cases of carcinoma of the breast, stomach, rectum and uterus, carcinoma cells were found in apparently normal tissue in 30. A definite knowledge of ordinary section material is essential for the procedure,

and the tissue to be examined must be absolutely fresh.

The technique is simple. After mechanical drying of the tissue to remove blood cells, its surface is scraped with a knife. The scrapings are immediately transferred to a slide and a smear similar to a blood smear is made. The slide is then fixed in Schaudinn's solution for from two to twenty minutes, stained with methyl alcohol and Mayer's hemalum, carried through the alcohols to xylol and mounted in the usual manner.

Of 212 cases in which tissues from the breast were examined, the diagnosis made by the wet film method as compared with the diagnosis made by the usual section method was erroneous in 12. Two of the errors were made in 233 cases of mammary carcinoma. One of the 2 was due definitely to an error of technique and the other to the fact that the film was made from an uninvolved part of the breast.

This report includes 1,000 cases in which the wet film method was used for practically all tissues of the body. In the first 200 cases there were 9 errors, and in the remaining 800, 20 errors. The authors have observed a definite difference between malignant and benign cells even when the cells were examined individually.

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NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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